

BOSTON UNIVERSITY
COLLEGE OF LIBERAL ARTS
LIBRARY

THE SCHOOL REVIEW

A JOURNAL OF SECONDARY EDUCATION

VOLUME XXXIX

MARCH 1931

NUMBER 3

Educational News and Editorial Comment

A STUDY OF CHRONIC FAILURES IN THE HIGH SCHOOLS OF DENVER

Under the direction of Charles E. Greene, the Department of Research of the Denver public schools during the school year 1929-30 made a study of chronic failures in the high schools of that city, the purposes of the study being to discover the causes of the failures and to recommend procedures for dealing with them. Following is the plan used in making the study.

All pupils from Grades X A to XII A, inclusive, who failed in two or more subjects the first six weeks of this year and who had failed in two or more subjects the second semester of last year were included in the study. They were given an intelligence test. Their cumulative records in junior and senior high school were sent to the research department. Question blanks concerning these pupils were sent to their class and home-room teachers, their counselors, assistant principals, and deans. A folder was prepared for each failing pupil, and in the folder were placed all materials collected. The marks for the second six weeks and the first semester were then added to the record. An attempt was then made to summarize and analyze each case, and these summaries were written up to be used for comparative studies. Finally, the failures were classified into types. Procedures were suggested for each type.

The findings of the study are reported in two divisions: (1) the types of failing pupils and (2) suggested procedures for failing pu-

pils. As might be expected, the second division follows naturally on the first. The report points out that many cases fall into two or three of the failing types listed and that this fact should be borne in mind in prescribing remedial treatment. The tabular evidence on which these findings are based is not reproduced here.

TYPES OF FAILING PUPILS

1. Intelligence
 - a) Below average. Boys range as low as 66 in intelligence quotients with mental ages as low as 10 years and 10 months.
2. Physical
 - a) Physically handicapped or low in vitality.
3. Outside distractions
 - a) Outside or extra-curriculum interests. This has reference to pupils who are so absorbed in avocational or intellectual interests in a narrow field that they neglect their school work.
 - b) Chiefly concerned with social life or exhausts time by going out too much.
 - c) Too much outside work. This refers to jobs outside of school for earning money.
4. Social and emotional maladjustments
 - a) Immature, new to school, or unadjusted socially. Some pupils, normal in intelligence, fail because of their slow development or because of limited environment. Others are extremely timid and fearful. In many cases pupils from small towns suffer from lack of social adjustment and do failing work.
 - b) Emotionally unstable. This refers to the very nervous or erratic person whose difficulties are chiefly emotional.
 - c) Extreme maladjustment, unsocialized or antisocial, antagonistic. There are several pupils who are bitter toward school, home, or individual teachers. Some are semi-criminal in attitude.
5. Home problems
 - a) Unfavorable attitude or lack of interest in the home. Some homes are antagonistic toward the school program; some are very critical. In certain homes parents are interested chiefly in the social standing of their children and do not consider the school a very important institution. Some homes rely chiefly on special lessons in music and dancing or church activities for the education of their children.
 - b) Homes in which pupils do not receive the close supervision necessary to build up study habits or in which parents are no longer able to control the habits of their children.
6. Subject failures
 - a) Subject difficulties are noticeable chiefly in reading. Study should reveal others.

7. Absence

- a) There are many causes of absence. These need to be analyzed.

SUGGESTED PROCEDURES FOR FAILING PUPILS

1. Below average in intelligence-test results (boys, 37; girls, 23)¹

- a) For group test intelligence quotient of less than 85 a Binet must be taken after failures in Grade X. If below 80, he may be eliminated from senior high school. Such cases are so few in number that it is impracticable to furnish a program for them.
- b) For intelligence quotients from 80 to 100 the program should be modified.
- (1) The pupil should carry few subjects.
- (2) He should be in low classifications and in modified subject-matter groups.
- (3) Difficult subjects should not be undertaken.
- (4) His course should be more definitely vocational.

2. Physical handicap (boys, 15; girls, 11)

- a) These cases should be reported to the health-service department for careful complete examination or reports from the family physician. The principal should be furnished medical advice. The school should then provide adequate nutrition and rest or corrective treatment when possible. A modified program of school work should then be provided if that is found necessary.

3. Outside distractions (boys, 26, 2, 41; girls, 3, 8, 8)

- a) Outside or extra-curriculum interests. Many pupils become absorbed in some single activity and want to spend all their time and energy on it. This may be music, radio, or athletics. Such an interest is likely to function both in and out of school. If reasoning does not affect such pupils, the same regulations should be made with reference to these extra-curriculum activities that are made with interscholastic athletics—pupils must be up in their regular work to play in orchestra, and the like.
- b) Chiefly concerned with social life or exhausts time by going out too much. The first procedure should be a conference between principal and pupil. If this is not successful, there should be a conference between principal and parent. If nothing can be accomplished, it becomes a case for suspension from school, depending somewhat on the seriousness of the case.
- c) Too much outside work. Some pupils must work outside to earn money to remain in school. Others do not have to work. Where a conference between principal and pupil or report of teachers indicates that work is interfering with school, the pupil should be advised to drop the outside work if this is practicable. Sometimes the character or the environment of the work distracts the pupil from his school work. If the work cannot

¹ The numbers in parentheses represent the number of cases of each type. If the type has various subdivisions, the number of cases in the subdivisions are given.—
EDITOR

be dropped nor modified in time and if the money from it is necessary to keep the pupil in school, the school program for the pupil should be modified. For example, a boy who works at night may be allowed to come late. Co-operation of the home should be enlisted to see that coming late really means extra rest.

4. Social and emotional maladjustments (boys, 26, 4, 3; girls, 8, 2, 4)
 - a) Immature, new to school, or unadjusted socially. These pupils require understanding. Many a pupil of adolescent age tries to attract attention because he wishes to convince himself that he is not timid. Some pupils mature slowly and appear to be completely lost in the school environment. Above all, sympathy and understanding are needed for these pupils. Principals and teachers should study these persons and deal with them accordingly. Programs for such pupils should be carefully supervised and should include such items as time for study, provision for study, and subject difficulties.
 - b) Emotional instability. There are some very nervous and erratic pupils in our high schools. Some of them should have psychiatric examinations. Sometimes the cause is physical and can be removed. Such pupils require sympathy and understanding by teachers.
 - c) Extreme maladjustment, unsocialized or antisocial, antagonistic. It is probably not good for the morale of the school to keep in it pupils who are wholly out of sympathy with its program. Such pupils often take extreme steps so that suspension or expulsion results. The first step, however, is an attempt to find the cause of the antagonistic attitude and to find whether it can be removed. Every attempt possible should be made to do this. A psychiatric examination may be desirable. When this is impossible and when pupils are doing failing work, suspension or expulsion should be used to rid the school of the antagonistic members.
5. Home problems (boys, 12, 29; girls, 11, 11)
 - a) Unfavorable attitude or lack of interest in the home. When parents consistently disregard the demands of the school and encourage their children to neglect their school obligations, the school is justified in taking extreme measures and in suspending the offending pupil. In some homes there will be found an antagonistic attitude toward the school. This attitude makes it impossible for the pupil to have interest in and enthusiasm for his work. In some cases a conference between the principal and parent will convince the parent of the necessity for co-operation so long as the pupil remains in school. If antagonism continues and failure results, suspension may have to be resorted to. Ignorance in the home of the school's program and of the need for proper study habits brings the same results as antagonism.
 - b) Lack of home control. Some homes are no longer able to control children. They lean on the school and hope that their children will receive the regulation and supervision that they (the parents) are unable to give.

Such cases are not generally so desperate as to require that children be taken away from their parents by the court. It becomes necessary for the school to give close supervision to the work of the children and to take the place of parental restraint in so far as possible. In extreme cases suspension may be necessary.

6. Subject failures (boys, 24; girls, 13)

- a) Some pupils have subject difficulties. Most often this is reading. Every teacher should realize that he has a peculiar reading problem in the subject matter he places in the hands of his pupils. He should conduct informal reading tests in his subject. See the research department for suggestions for doing this.
- b) There are many subject difficulties in the senior high school about which we know very little. Each teacher should realize this and try to analyze the hard spots of his subject. Many times the phases of the subject that seem easy to teachers are difficult for pupils. Remedial instruction is not always the cure for difficulty in a given subject. Some pupils have so much difficulty with a subject that they should never be required to take it.

7. Absence (boys, 17; girls, 9)

- a) Before one can deal with absence, its causes must be discovered. Some pupils fail because of absence. Every school should study its attendance problem, select the pupils who are absent frequently, and find the causes for these absences.

FURTHER INFORMATION CONCERNING THE REORGANIZATION OF THE UNIVERSITY OF CHICAGO

This section of the February number of the *School Review* carried an explanation of the plan of reorganization of the University of Chicago. The item was made up almost entirely of quotations from an article by John P. Howe published in the *University of Chicago Magazine*. Further expositions of the plan have more recently made their appearance. One of these is an address by President Robert Maynard Hutchins delivered in the University Chapel on the occasion of the One Hundred and Sixty-second Convocation on December 23, 1930, and published in the January number of the *University Record*. Two others are statements prepared by Dean C. S. Boucher and printed in convenient pamphlet form under the titles "The New College Plan of the University of Chicago—A Statement for High-School Principals and Teachers" and "The New College Plan of the University of Chicago—A Statement for High-School Students." The pamphlet for principals and teachers has been prepared and

issued in response to the flood of inquiries that have poured into the offices of the University from all over the country following the widespread publicity given by the press to the announcement of the plan of reorganization. The pamphlet for high-school pupils aims to answer specific questions concerning the plans that come to the minds of prospective college students, such as the following: "How will the Chicago plan affect me?" "Have entrance requirements been raised?" "Shall I receive individual attention and advice?" "Shall I have an opportunity to get a broad, general education?" "Shall I have an opportunity to specialize in a chosen subject?" "Will my classes be large or small?" "What kind of instructors shall I have?" "If I am a superior student in any subject, shall I be given special opportunities?" "What is meant by the College and Upper Divisions?" "With course credits abolished, how shall I know whether I am progressing satisfactorily in the College?" "What about the examinations?" "What sort of life shall I have outside the academic program?"

Copies of a reprint of the convocation address may be secured upon request to the office of the President; copies of the pamphlets, upon request to the Dean of the College, the University of Chicago.

AN INVESTIGATION OF THE HIGH-SCHOOL CURRICULUM IN MICHIGAN

The Michigan Schoolmasters' Club is sponsoring a study of the curriculum in junior and senior high schools in that state. The investigation is being directed by George E. Carrothers, director of the Division of University Inspection of High Schools at the University of Michigan. Evidence of the investigation is being assembled and digested in advance of the 1931 meeting of the Schoolmasters' Club, which will be held April 30 and May 1. The keynote of the program this year is to be curriculum revision.

The evidence being gathered is chiefly of two sorts: facts about the present situation and opinions about the place of subjects in the curriculum. A questionnaire form, on which the facts and opinions are recorded by administrative officers in individual schools, lists the different subjects by groups. To provide the description of the present situation, the respondents report the number of semesters of-

ferred in each group and subject, the grades in which each subject is offered, and what pupils, if any, are required to study the subject for graduation. The questions of opinion put concerning each group and subject are: "Would you retain or eliminate it from your school?" "If retained, how many semesters would you offer?" "In what grade or grades would you offer?" "How many semesters would you require of all pupils?" "If you have objections to the subject, are they to subject matter as now organized or methods of instruction?" Respondents are requested in making answer to act on the assumption that they could enjoy a maximum amount of freedom in retaining, adding, eliminating, or modifying subjects of instruction in their schools. The form used includes also several additional questions, such as, "Which of the principal fields of study in the secondary school (English, social studies, foreign languages, mathematics, sciences, physical education and health, vocational, fine arts, extra-curriculum activities) yield, in your opinion, the largest value to pupils in your community?" "If the subjects were not recommended or required for admission to college, what subjects do you believe would be (1) promptly eliminated from the secondary-school curriculum, (2) greatly reduced?" We await with interest the outcome of this study.

TRENDS AND PRINCIPLES IN STATE HIGH-SCHOOL STANDARDIZATION

A study of the standards of the different states for high schools has been made by Henry H. Hill, and the printed report of the study has recently made its appearance under the title *State High School Standardization* (Bulletin of the Bureau of School Service, College of Education, University of Kentucky). The complete report deals with standards in several aspects, but the present reference to the study will draw on two aspects only: (1) the trends in state standardization and (2) the "basic principles" of state standardization of high schools. Other portions of the bulletin deal with the historical development of high-school standardization, an analysis of the standards in effect in 1929, and an extended treatment of the plan of high-school reorganization in North Carolina.

The study of trends in standards was made by comparing the re-

sults of an analysis of standards in 1918 made by J. L. Manahan with the standards in 1929. The comparison included thirty-seven states. The author concludes that there have been eight trends.

1. The broader purposes of leadership are being emphasized rather than the narrower aims of inspection.
2. Minor administrative features are being stabilized.
3. Elementary-school standards are being correlated with high-school standards.
4. More than one classification of state high school is being provided.
5. Suggested curricula for small schools are being set up, one of which, when adopted by the local unit, becomes relatively fixed.
6. "Adequate" or "required" or "suitable" library requirements are being changed to a specific number of volumes, or amount of money invested in the library.
7. "Adequate" laboratory apparatus is being changed to a specific list.
8. Standards are being set up for junior high schools and six-year high schools.

The basic principles of standardization put forward in the concluding chapter of the report as inferences from the investigation are five in number: (1) The state should establish a minimum program of secondary education. (2) The state is responsible for leadership in all secondary schools. (3) The state should set up standards which more directly influence education. (4) The state should eliminate traditional standards which are not based on modern research and investigation. (5) The state should co-ordinate and harmonize the efforts of all the educational units. It should go without saying that, even if these principles are regarded as acceptable, it would be impossible at once to put them in complete operation. For instance, even though the fourth principle may seem fully acceptable, we know that findings of related research are still too limited to afford anything like an adequate basis for setting up standards objectively justified. To establish all standards in the findings of investigations is a huge task that must extend over a long period. In the meantime we shall be obliged, in our efforts to set up standards in a number of significant respects, to rely on a composite of experience and investigation.

INSTRUCTIONAL PRACTICES IN THE LABORATORY SCHOOLS

The Laboratory Schools of the University of Chicago have over a long period been carrying on a number of constructive practices

which have not heretofore been exploited in print. This lack is now to be supplied by a series of publications in pamphlet form providing descriptive accounts of various phases of the instructional program provided for elementary- and secondary-school pupils under the direction of the Department of Education. The selection and organization of the materials of instruction are explained and the procedure in teaching is described and illustrated in such manner that each pamphlet serves as a teacher's manual in the subject with which it deals. Available numbers of this series relate to voluntary reading in the intermediate grades and drawing in the first six grades. Forthcoming numbers deal with elementary-school science, geography, and history. Subsequent numbers will deal with other elementary-school subjects and with courses taught in the University High School. The *School Review* will make special note as they appear of numbers relating to secondary education.

SOLVING THE PROBLEM OF THE HIGH-SCHOOL PAPER
IN A SMALL CITY

Coeur d'Alene, Idaho, is a city with a population of less than 10,000. The enrolment of the local high school is 650. School authorities there have been confronted by a problem common to most communities and schools of this size or smaller where effort is made to provide the advantages of a school paper—the problem of securing sufficient financial support to conduct a satisfactory paper.

The nine-year history of the high-school paper in Coeur d'Alene has been, until recently, a series of short and, for the most part, discouraging chapters. According to J. J. Rae, superintendent of schools, and George H. Young, instructor in English and journalism in the high school, the paper started as a mimeographed sheet, for which the interested pupils paid a small subscription price sufficient to cover the cost of ink and paper. "The pupils did the work, and the school supplied the machinery." From the beginning the paper has been issued under the name of the *White Pine* out of regard for the chief industry of the region, which is felling white-pine forests and manufacturing lumber. In the second stage the *White Pine* became a four-page, three-column paper printed by the local newspaper publisher at low cost every two weeks, with the understanding

that the high-school paper would refrain from advertising in any form. The small cost was easily met by voluntary subscriptions from the pupils. In the next stage the paper became a four-column weekly. This change brought up again the question of soliciting advertising to support publication, a procedure often frowned on by publishers of local papers and by local merchants. Decision was against this practice and for subsidization of the weekly by funds drawn from the one-ticket plan, now not uncommon, of supporting all extra-curriculum activities from a central budget. All went well until a newspaper syndicate bought the local paper and advanced the price of printing the *White Pine* to standard printing rates, which were twice those previously paid. The case of the paper was then hopeless; and, as soon as available resources were exhausted, publication was discontinued. On account of values inherent in a good school paper the problem of resuming publication was taken up again at the opening of the current school year. Conference with the editor of the local paper brought about agreement on the following plan.

It was agreed that the pupils in journalism in the high school should have one page of the paper every Wednesday for the publication of high-school and grade-school news. The caption of the page is "The White Pine High School Edition of the Coeur d'Alene Press."

The pupils in the journalism class write the stories for this page, realizing that there is a more professional aspect in reporting for a page in the town's newspaper. In a semester's time this stimulating force has brought rather surprising reactions in respect to news-writing. On one occasion activities of the schools, including the junior high school and the elementary grades as well as high school, were covered so well that enough news was gathered to take care of two pages in the Coeur d'Alene Press. In order to make something of a special edition out of it, the functions of the music department of the high school were featured. The pupils in journalism have expressed a great deal of enthusiasm in the enterprise. The pupil editor and a staff of assistants meet two evenings a week at the editorial office of the Coeur d'Alene Press to do rewriting, to write heads, to turn out the latest stories. The linotype operator is at hand to set the school copy; all the facilities of the office are at the disposal of the student journalists, including the syndicate service, stories, or cuts that can be used to advantage in a high-school paper. These meetings at the Press offices give the potential journalists an experience that could not be more practical.

The circulation of the paper is another feature which more than justifies the pupils' endeavor. Parents and friends of the school who never took time to look

at the school paper when it was printed as an individual unit follow the activities as published in a page of the town paper with a good deal of interest. Favorable comments on the paper have been numerous.

The venture is no burden to the pupils, nor is it a burden to the business men although advertising is solicited by pupil managers for the page. Advertising for this page is sold at the school rate of thirty-five cents a column inch, while the regular flat rate amounts to fifty cents a column inch. Inasmuch as the page has a legitimate circulation and inasmuch as it is well read, there is no difficulty at all in getting all the advertising wanted, though the staff feels that more than thirty-five column inches to a page is not desirable. There are four pupils on the advertising staff, and one business man has assigned to each of them the task of writing one of his advertisements. The one who writes the best copy is to be awarded a prize. The staff for soliciting the advertising, and for collecting when necessary, is given 25 per cent of this income, which gives the department a small working fund.

THE PUBLICATION OF PUPILS' LITERARY PRODUCTIONS

From the high school at Newport News, Virginia, comes a booklet bearing the title *High Tide*, which contains the literary writing of pupils. It is a publication of thirty-two pages and carries almost a hundred pieces of original writing, consisting mainly of poems of various types but including also short stories, playlets, and bits of descriptive prose. The booklet is subtitled "A collection of the best creative writing done by the students of the Newport News High School during the first half-semester of the year 1930-31." A foreword by the principal, Fred M. Alexander, states that the materials have been produced by pupils working on their own initiative and that, as a means of encouragement, the school will publish each semester a typical group of the literary productions of the pupils. The booklet carries the imprint of the Newport News High School Press.

AN OPPORTUNITY FOR CORRELATION

Teachers of English, especially in the smaller high schools, frequently teach one, and often more than one, other subject. A. R. Mead (in an article entitled "How Many Subjects Should a High-School Teacher Be Prepared To Teach?" which appeared in the January, 1927, *Peabody Journal of Education*) by assembling the results of twenty-one fragmentary studies of high-school teaching combinations, secured fairly reliable figures for seventeen southern

states. Marked agreement is discovered: the average number of subjects assigned to the typical high-school teacher in the states covered by Mead's study is three; the number of subjects assigned to one instructor tends to vary with the size of the school. The combinations of instruction in English with instruction in other subjects in accredited high schools of the Association of Colleges and Secondary Schools of the Southern States shows that 725 high-school teachers of English are teaching one, or more than one, other subject, with the distribution shown in Table I.

That such a distribution of the teaching load may have serious dangers is unquestionable. Specialists in English are often required

TABLE I
SUBJECT-COMBINATIONS TAUGHT BY TEACHERS OF ENGLISH*

Combination	Percentage of Teachers
English and social science	38.0
English and Latin	14.0
English and mathematics	12.0
English and French	11.0
English and science	7.0
English and Spanish	4.5
English and one of ten other subjects	13.5

*These data are taken from Arthur Winn Vaughan, *State Teachers College Curricula for the Development of Teachers of English*, p. 30. Nashville, Tennessee: George Peabody College for Teachers, 1930.

to give instruction in subjects for which they are inadequately prepared. However, from another point of view the distribution may not be without its merits. The day of highly specialized departmentalization may be waning. School authorities are beginning to realize that the inter-relationships of departmental subject matter and disciplines have often been neglected. Many junior high schools are practicing only partial departmentalization in the seventh and eighth grades. While the main reason for postponing complete departmentalization is probably the desire to transfer junior high school pupils gradually from the one-teacher régime of elementary grades to instruction under several different teachers in senior high schools, it may be that the intermediate schools have also caught the idea of inter-relationships of disciplines. At any rate, from the point of view of extending the supervision of pupils' reading, writing, and speaking experiences outside the narrow English departmental

bounds, the fact that many English instructors are teachers of other subjects as well might be capitalized in the direction of co-ordination.

A SYMPOSIUM ON THE ADOLESCENT

The *Junior-Senior High School Clearing House* continues its policy, instituted at the time it was taken over as the *Junior High Clearing House*, of devoting full issues to the treatment of special problems or phases of secondary education, the materials of an issue being planned and prepared under the direction of a committee. For example, the January issue is given over to consideration of "The Adolescent." Besides a preliminary statement by John Rufi, chairman of the committee for this issue, and an editorial by Philip W. L. Cox, this issue contains the following contributions: "Modern Views on Adolescence," by Fowler D. Brooks; "An Interpretation of Recent Literature concerning the Psychology of Adolescence," by Theophil W. H. Irion; "A New Method of Studying Physical Growth," by D. E. Zook; "The Contribution of Guidance in the Problems of Adolescence," by Arthur J. Jones; "Pupil Adjustment in the Secondary School," by William C. Reavis; "Student Activities as a Means of Providing for Adolescent Needs," by Earle U. Rugg; "A Selected and Annotated Bibliography on the Psychology of Adolescence, 1920-1930," by W. R. Carter; and "A Study of the 'Talk Contacts' of Adolescent Pupils with Their Teachers," by Howard Yale McClusky and Ernest H. Chapelle.

A NEW POLICY FOR "SCHOOL LIFE"

A few months ago announcement was made of the appointment of William D. Boutwell as head of the editorial division of the United States Office of Education. One of the responsibilities of this position is the editorship of *School Life*, a monthly educational periodical, now in its sixteenth year, issued by the Office of Education. In the January number the editor announces a significant new policy for that journal.

The United States government has a vast store of publications, information, maps, pictures, lantern slides, and other services which teachers throughout the nation would be glad to have if they knew what the services were, how they can be obtained, and how much they cost.

School Life, official organ of the Office of Education, according to a new policy, has been given the task of unlocking this hoard of material valuable to the schools. *School Life* will delve into all the departments, commissions, bureaus, boards, and other agencies, searching out and reporting the educational activities and the educational resources of the United States government.

Findings of the research and statistical studies of the Office of Education will reach teachers and administrators first through *School Life*. Examples of this policy can be found in three articles of this issue: "The Rise of the Land-Grant Colleges and Universities," Doctor Klein's summary of the land-grant survey; "Are There Too Many Teachers?" Doctor Evenden's launching of the National Survey of Education of Teachers; and "What the High Schools Are Doing for the Individual," Doctor Billett's report of the preliminary findings of the national survey of secondary schools.

The same number of the journal includes an advertisement of the Geological Survey's maps; "The Children's Charter," emanating from the White House Conference on Child Health and Protection; a new program for prison education outlined by A. H. MacCormick, assistant director, United States Bureau of Prisons; and a special section devoted to new government publications helpful to teachers.

The statement makes clear that the new policy "does not mean that *School Life* will not continue to print articles on outstanding educational achievements of the nation's schools"; but it is gratifying to note that this official organ of the Office of Education will aim to emphasize the distinctive services which its connection with the national government makes logical.

A DEPARTURE IN THE SUPERVISION OF HIGH-SCHOOL TEACHING

The conventional lists of practices in supervision in high schools usually include, among many other practices, classroom visitation by the principal and demonstration teaching. Unquestionably, considerable classroom visiting is done. Demonstration teaching is not an uncommon practice in elementary schools, but it is seldom carried on in high schools. In the Heights High School, Cleveland Heights, Ohio, the principal, E. E. Morley, seems to have hit upon a combination of classroom visitation and demonstration teaching that gives unusual promise in the improvement of teaching. We are privileged to make the following quotations from a recent report of Mr. Morley to his superintendent, quotations that disclose both the nature and the apparent value of the practice.

The program of demonstration teaching in the Heights High School was started this semester in the mathematics department. The department head invited the teachers of mathematics to come to her room to see how she introduced a new topic to a class in third-term algebra. Each teacher was directed to give a study assignment or a written lesson to his own class and to appoint a reliable member to take charge of the group in his absence. At the close of the day the mathematics teachers met with the principal to discuss the demonstration. This same procedure has been followed approximately in all subsequent demonstrations.

In each case, so far, teachers have volunteered to do the demonstrating. The teacher giving the demonstration prepares a brief outline of the assignment to be covered and a statement of objectives to be attained. Visitors are at liberty to take notes during the period and to come to the after-school conference prepared to ask questions, offer suggestions, and make criticisms. A few brief reports of some of the demonstrations and follow-up conferences will serve to show something of their character and perhaps to suggest the values that may be derived from this form of supervision.

Demonstration in French III.—No word of English was spoken during the entire period. Questions asked in French by the instructor were answered in French by the pupils. Facts of grammar were illustrated by sentences taken from a French story. Approximately half the pupils wrote their answers on the blackboard, and these sentences were corrected by the instructor, who kept up a running fire of comments. The assignment was apparently too long to be covered completely within the hour. Every member of the class, however, was given an opportunity to participate in some way in the activity.

Most of the discussion following the class exercise was confined to justifying the practice of eliminating the use of English in foreign-language teaching. "Even in explaining and illustrating points in grammar," it was asserted, "more time may be consumed, but impressions will be more lasting, and facility in the use of the language will be increased." The instructor made use of every teaching opportunity that arose. Whenever a question was asked or a difficulty encountered, the matter was laid before the class and discussed in open forum. Decisive emphasis was laid upon the importance of always maintaining keen interest in the progress and welfare of individuals, particularly of those who tend to lack self-confidence.

Demonstration in Plane Geometry II.—This lesson introduced to the class the subject of the relations between the intersecting secants and tangents and their segments. These relations were illustrated by showing that the lines are corresponding parts of similar triangles. Figures for each proposition were already drawn upon the blackboard when the class arrived. Each pupil who was called upon to give a proof drew the necessary construction lines and marked the corresponding parts of pairs of similar triangles with the same shade of colored chalk. He then gave the steps of the proof as he stood beside the completed figure. After showing two triangles similar, he stated the proportions, writing

them on the board as he talked. In some cases it was necessary to lead the pupil on to each succeeding step by asking a question or making a suggestion.

One pupil provided a teaching problem which was not easy to handle. He reported that he did not understand one of the propositions. The instructor called him to the board and asked him to read the proposition from the book. He read haltingly as though unfamiliar with the terminology. The instructor then asked him to state what was given and what was asked for in the problem. Upon discovering his inability to answer, the instructor had him read the problem again, repeating the process several times. Finally, it became evident that the pupil was hopelessly bewildered, and he went back to his chair without accomplishing anything.

In the discussion of this teaching exercise, the following points were made: (1) Time was economized by having the figures drawn on the blackboard when the pupils arrived. (2) A brief review of the conditions required to make triangles similar and of the relation between corresponding sides of similar triangles furnished the necessary background of information for the new proposition. (3) The use of colored chalk was a convenient device for illustrating vividly corresponding parts of the similar triangles. (4) Members of the class showed evidence of having acquired a good technique in stating proofs. Only such statements were written on the board as seemed necessary to render each step clear, and no statement was written until the point in the proof was reached where it was needed. (5) Pupils were required to draw construction lines for their figures, thus showing at the start evidence of their understanding of the problem. (6) Too much time of the group was taken in laborious efforts to draw out something which did not exist in the mind of one backward pupil. It was evident that the difficulty was inability to read. Individual instruction in reading was indicated as the remedial treatment in this case. . . .

These examples are perhaps enough to show how the project is working. From such experiences the teachers are gaining new standards of comparison by which to judge their own practice. They see examples not only of better technique than their own but sometimes of less skilful teaching. Good practice and bad, however, are labeled in the department conferences, and both the observer and the observed profit by their experience.

The supervisor gains valuable standards for use in evaluating teaching found in subsequent classroom visits. Both he and the teacher have a common experience in terms of which a fairer and more significant discussion can be carried on.

The problem of securing the willing co-operation of teachers in this program of demonstration within the departments has not been difficult in the Heights High School. Teachers do not seem greatly to mind the ordeal when they understand that they are asked to illustrate for their colleagues a practice which they are doing especially well.

While the enterprise is apparently thriving at present and shows promise of definitely raising the general standard of teaching in the school, lasting values can be determined only after a longer period of trial has elapsed.

THE PLACE OF NATURAL SCIENCE IN PROGRAMS OF HIGH-SCHOOL GRADUATES

JOSEPH N. GAMBLE

Foxwood School, Flushing, Long Island, New York

THE PROBLEM

The study reported in this article was undertaken in an endeavor (1) to determine existing curricular practices with regard to the requirement and the election of natural science as revealed in programs of high-school graduates and (2) to find to what extent there is sequential coherence in the courses in natural science.

The following questions directed the study. (1) What part of the pupils' recitation time is being devoted to science in comparison with other subject-matter groups? (2) What science subjects are offered? (3) How many years or units of science are required before graduation? (4) What, if any, particular units of science are specified, and are these specifications limited to particular years? (5) May a science class in a given course be composed of pupils from various academic years? (6) How does college preparation influence the requirements and the courses offered in science? (7) Does the adoption of the single lengthened period for both laboratory and class work limit the amount of instructional time available for science? (8) To what extent do sequences of science subjects appear in pupils' programs?

SOURCES OF THE DATA

Data were collected from the school records of pupils who had graduated in 1926-29 from the six senior high schools shown in Table I. Three specialized high schools in one city (Schools 1, 2, and 3) which had different and definite objectives of training were studied. Three high schools (Schools 4, 5, and 6) giving a general, comprehensive type of training were included. The fourth is located in a capital city in an industrial state on the Atlantic seaboard; the fifth is located in a capital city in an agricultural state on the Pacific

coast, and the sixth is located in a large industrial center of the Middle West.¹

The data were transferred from the record forms of each school to a specially prepared cumulative record card. These data included each pupil's mark in every subject, whether the subject was required or elected, for each semester of the academic Grades IX-XII, inclusive. Data regarding the pupil's entire program of study, relative rank in scholarship, intelligence rating, attendance, and date of birth were included. The number of pupils in each class and the mean intelligence rating in each school were given.

TABLE I

NUMBER OF GRADUATES OF CLASSES 1926-29 IN EACH OF SIX SCHOOLS WHOSE PROGRAMS WERE STUDIED

School	Number of Graduates
1. Central High School, Springfield, Massachusetts	1,006
2. Technical High School, Springfield, Massachusetts.....	778
3. Commerce High School, Springfield, Massachusetts.....	932
4. Senior High School, Trenton, New Jersey.....	1,500
5. Senior High School, Sacramento, California*....	610
6. Grover Cleveland High School, St. Louis, Missouri	1,246
Total.....	6,072

* Only graduates of 1929 were studied in this school.

Except in the case of the high school in Sacramento these data were collected by the author with the assistance of a postgraduate pupil from the commercial department in each high school. While minor errors may have occurred during the transfer from the school forms to the cumulative record cards, it is believed that the method pursued reduced such errors to a minimum. The data for the Sacramento school were collected by pupils graduated from the Sacramento Senior High School under the direction of the department of research of the superintendent's office.

¹ The study here reported was made while the author was a member of the staff of the Institute of School Experimentation of Teachers College, Columbia University. For help in formulating the methods employed, the author is deeply indebted to Dr. Otis W. Caldwell and members of the Institute of School Experimentation. The principals and science teachers of each of the schools whose data were used gave all possible assistance.

RESULTS OF THE STUDY

The results of the study relate to practices in the senior high school. If the ninth-grade record of a pupil was reported from a junior high school, it was included in terms of equivalent units in the record of the senior high school from which he graduated.

The portion of the pupils' recitation time devoted to natural science.—When the distribution of the pupils' recitation time among eight divisions of subject matter was determined, a semester's work in a subject was regarded as including five fifty-minute periods each week. Some science subjects had four recitation periods and one

TABLE II
PERCENTAGE OF TIME GIVEN TO EACH SUBJECT-MATTER DIVISION IN
PROGRAMS OF 6,072 GRADUATES OF SIX HIGH SCHOOLS

SUBJECT-MATTER DIVISION	SPRINGFIELD			TRENTON	SACRA- MENTO	ST. LOUIS
	Central	Technical	Commerce			
English.....	19.8	16.6	17.7	19.9	17.2	18.2
Fine arts.....	8.4	1.2	5.2	2.3	9.9	7.7
Foreign languages..	24.4	8.4	3.4	13.4	10.7	9.0
Mathematics.....	14.0	15.0	3.3	12.9	8.8	9.7
Natural science.....	9.3	14.1	3.6	8.3	7.4	9.2
Physical education..	9.5	3.8	10.5	7.8	16.5	13.8
Practical arts.....	3.5	32.2	41.2	20.9	15.5	16.1
Social science.....	11.1	8.7	15.1	14.5	14.0	16.3
Total.....	100.0	100.0	100.0	100.0	100.0	100.0

double laboratory period which was weighted as one recitation period. Certain commercial and vocational subjects also required double periods, and these were treated in a similar manner. The range of time distribution in natural science shown in Table II extends from 3.6 per cent in the Commerce High School in Springfield to 14.1 per cent in the Technical High School in Springfield and indicates that there is a wide disagreement in the emphasis accorded natural science. English is the only subject which has a narrow range of variation in time allotment in the programs of graduates of these high schools. For this subject the percentage rises from 16.6 in the Technical High School in Springfield to 19.9 in the high school in Trenton. The range in percentages for fine arts is from 1.2 in the Technical High School to 9.9 in Sacramento; for foreign languages,

from 3.4 in the Commerce High School to 24.4 in the Central High School; for mathematics, from 3.3 in the Commerce High School to 15.0 in the Technical High School; for physical education, from 3.8 in the Technical High School to 16.5 in Sacramento; for practical arts, from 3.5 in the Central High School to 41.2 in the Commerce High School; for social science, from 8.7 in the Technical High School to 16.3 in the Grover Cleveland High School in St. Louis. Counts found that the natural sciences were given an average of 10.2 per cent of the total pupil recitation time in the upper four years of fifteen public secondary schools during the second semester of the year 1923-24.¹ When the results of the present study are compared with those reported by Counts, it appears that the time allotted the natural sciences has not increased and that these studies continue to occupy a position of marked quantitative inferiority in comparison with foreign languages, mathematics, and social science. From the data presented the most significant point to be observed is the variation in the time allotted to natural science in the high schools studied.

The science subjects offered.—The large number of science subjects offered reflects uncertainty as to the science subjects that should be taught and as to those that should be eliminated from the curriculums of these senior high schools. Table III shows the sixteen branches offered in the six senior high schools of the present study. Astronomy, euthenics, household chemistry, plant science, radio, shop science, special science, and zoölogy are each found in but a single high school; only chemistry, general science, and physics are included in the science program in every school. There is little agreement among these high schools with regard to the science program offered to pupils in the tenth, eleventh, and twelfth grades.

Number of years or units of science required for graduation.—In the Central High School or the Commerce High School in Springfield a pupil may graduate without having studied any natural science. The requirements in the Technical High School, Springfield, are more variable. In this school one year of laboratory science is re-

¹ George S. Counts, *The Senior High School Curriculum*, p. 24. Supplementary Educational Monographs, No. 29. Chicago: Department of Education, University of Chicago, 1926.

quired in the college-preparatory course, two years in the industrial-arts course, and three years in the scientific course. The three other high schools require one year of science which may be satisfied by general science in the ninth grade or by a laboratory science studied in the tenth, eleventh, or twelfth grade.

Specifications as to particular units and grades.—When particular science subjects are specified, they are limited to particular grades.

TABLE III
GRADES IN WHICH SIXTEEN NATURAL-SCIENCE SUBJECTS ARE OFFERED
IN SIX HIGH SCHOOLS

SUBJECT	NUMBER OF YEARS OR UNITS	SPRINGFIELD			TRENTON	SACRAMENTO	ST. LOUIS
		Central	Technical	Commerce			
Astronomy.....	One-half	XI, XII					
Biology.....	One	X-XII			XI	X	X, XI
Botany.....	One-half		X			XI, XII	
Chemistry.....	One	X-XII	X-XII	XI, XII	XII	XI, XII	XI, XII
Euthenics*	One-half		XI, XII				
General science†.....	One-half	IX	IX	IX	IX	IX	IX
Home science.....	One-half		XI, XII	X-XII			
Household chemistry....	One				XII		
Physics.....	One	X-XII	X, XII	X, XII	X-XII	XI, XII	X-XII
Physiography.....	One-half	XI, XII	X-XII				XII
Physiology.....	One-half	XI, XII	X-XII			XI, XII	
Plant science.....	One					X	
Radio.....	One-half					XI, XII	
Shop science.....	One-half					XI, XII	
Special science.....	One-half	XI, XII					
Zoölogy.....	One-half	XII					

* This subject is classed as a natural science in the one high school by which it was reported.

† General science was reported by junior high schools.

Botany for girls, physics for boys in one semester of the tenth grade, euthenics for girls in one semester of the eleventh grade, chemistry in the tenth grade, and physics in the twelfth grade for boys are specified in curriculums of the Technical High School in Springfield. The high school in Trenton specifies physics for boys in the eleventh grade and household chemistry for girls in the twelfth grade in certain of its curriculums. The high school in Sacramento specifies that one year of a laboratory science may be chemistry, physics, or biology, provided it is taken in the third or fourth year. Grover Cleveland High School in St. Louis specifies that pupils who have not had

general science in the ninth grade are required to take one year of a special science. This high school does not limit the subject which pupils shall elect to fulfil this requirement. These specifications show clearly that each high school included in this study has its own science program and that there is little agreement as to what science subjects shall be specified and the particular grades in which they shall be taken except that in all the schools general science is assigned to the ninth grade.

Composition of science classes.—The class lists of several teachers in the Central High School, Springfield, were examined. Forty-five and eighth-tenths per cent of the pupils in one class in college-preparatory chemistry were Juniors; 41.7 per cent, Seniors; and 12.5 per cent, postgraduate pupils. In a general-biology class 42.3 per cent of the members were Sophomores; 15.4 per cent, Juniors; 38.4 per cent, Seniors; and 4.0 per cent, postgraduates. In a general-physics class 64.7 per cent of the members were Sophomores; 17.6 per cent, Juniors; and 17.6 per cent, Seniors. Four and one-tenth per cent of the pupils in a physiography class were Juniors; 75.0 per cent, Seniors; and 20.8 per cent postgraduate pupils. These examples make it clear that the classes in science subjects in this high school, with the exception of general science in the ninth grade, are composed of pupils from various academic years. In the specialized high schools studied (Central High School, Technical High School, and Commerce High School, in Springfield) a pupil may elect any subject belonging to a grade lower than his own. A survey of the three general high schools studied in Trenton, Sacramento, and St. Louis showed that eleventh- and twelfth-grade pupils are found together in the physics and chemistry classes. These data show that, except in the ninth grade, classes in science are composed of pupils from various academic years.

The influence of college preparation on the requirements and the courses offered in science.—The entrance requirements of most colleges provide that the community civics and general science given in the ninth grade may together count as one elective unit. The conventional college-preparatory courses in chemistry and physics are very definitely influenced by college requirements. These courses present problems similar to those of the College Entrance Examina-

tion Board, and they are mathematical and theoretical in their content. In the specialized high schools in Springfield general courses in chemistry and physics are open to those pupils who are not offering science for college entrance. The general high schools in Trenton, Sacramento, and St. Louis do not feel the pressure of the college-entrance requirements. Their courses of study in the laboratory sciences prepare for a more liberal interpretation of college entrance. Formal college preparation dominates the science situation in the high schools located in Springfield. In the general high schools studied in Trenton, Sacramento, and St. Louis, the prevailing type of college preparation allows more freedom in content and in presentation of the courses of study in science.

Limitation of time by the adoption of the single lengthened period.—The principal of the Grover Cleveland High School, St. Louis, stated:

The lengthened period, with its appropriate activities, more nearly meets the general aims and guiding principles in the suggested course of study here in St. Louis than does the shortened period through a larger recognition of the principles of self-activity, guidance, social progress, individual differences, and vocational probability. It makes 25 per cent more time available for instruction in all subjects except art, chemistry, and physics. The plan comes within Standards 4 and 8 of the North Central Association's definition of a unit for graduation.

The amount of instructional time available for class and laboratory work in science is limited to five sixty-minute periods each week. The plan has been in successful operation in this high school for three years, and requirements for college entrance have been adequately met. Thus, in this high school there is no evidence that the limitation of instructional time by the adoption of the lengthened single period has reduced the value of the laboratory or class work in science.

Sequences of science subjects appearing in pupils' programs.—The Committee on Science of the Commission on the Reorganization of Secondary Education outlined science sequences for various types of high schools.¹ The recommended sequences appear only in part in the science subjects required or elected in the programs of the

¹ *Reorganization of Science in Secondary Schools*. United States Bureau of Education Bulletin No. 26, 1920.

pupils studied. The lack of the existence of a sequence of science subjects in the traditional training for college entrance is evident in the fact that in the offerings of the schools studied six different divisions of science appear as electives for one academic year. In the pupils' programs of the Technical High School in Springfield a practically standard combination of three science subjects appears, but not always in a constant sequence. Table IV shows that general science, physics, and chemistry are the subjects. The pupils'

TABLE IV

COMBINATIONS OF SCIENCE SUBJECTS FOUND IN PROGRAMS OF 180 PUPILS GRADUATING FROM TECHNICAL HIGH SCHOOL, SPRINGFIELD, IN 1926-29, WHO HAD STUDIED THREE SCIENCES AND NUMBER OF PUPILS ELECTING EACH COMBINATION

SCIENCE COMBINATION	NUMBER OF PUPILS GRADUATING IN—				TOTAL
	1926	1927	1928	1929	
General science, physics, and chemistry...	53	24	56	37	170
General science, physiology, and chemistry	0	0	1	1	2
General science, physiology, and physics...	0	0	1	0	1
General science, physiography, and chemistry.....	1	0	0	0	1
General science, home science, and chemistry.....	1	0	0	0	1
Home science, physics, and chemistry.....	0	0	1	0	1
Physiology, physics, and chemistry.....	0	1	0	1	2
Physiography, physics, and chemistry.....	0	0	0	1	1
Botany, home science, and chemistry.....	1	0	0	0	1
All combinations.....	56	25	59	40	180

records from the general high schools in Trenton, Sacramento, and St. Louis show that the recommendations of the committee for large comprehensive four-year high schools have been followed to a considerable degree. In the schools studied biology or botany alone are the subjects most frequently studied in the tenth grade, while chemistry and physics receive almost equal attention in the eleventh and twelfth grades from pupils electing two laboratory sciences. The science combinations shown in the programs that have been followed by the high-school pupils studied indicate that a wide differentiation of science courses prevails in these schools. This condition prevents the following of any recommended science sequence by pupils in the high schools studied.

CONCLUSIONS

1. There is a wide variation (from 3.6 per cent in the Commerce High School to 14.1 per cent in the Technical High School) in the time allotted to natural science in the programs of the graduates of the high schools included in this study.

2. There is little agreement among these high schools with regard to the science program offered to pupils in the various grades except in the ninth grade.

3. One year or one unit of science is required before graduation from the general high schools in this study (the high schools in Trenton and Sacramento and the Grover Cleveland High School in St. Louis). This requirement may be satisfied by general science in the ninth grade or by a laboratory science studied in the tenth, eleventh, or twelfth grade.

4. There is little agreement as to the science subjects specified and as to the years to which they are limited in the science programs of the tenth, eleventh, and twelfth grades of the high schools studied.

5. Except in the ninth grade, classes in science are composed of pupils from various academic years.

6. Formal college preparation dominates the science situation in the high schools in Springfield which were studied. In the general high schools studied in Trenton, Sacramento, and St. Louis the prevailing type of college preparation allows more freedom in content and in presentation of the courses of study in science.

7. There is no evidence that the limitation of instructional time by the adoption of the single lengthened period has reduced the value of the laboratory or class work in science in the Grover Cleveland High School, St. Louis.

8. The science sequences recommended by the Committee on Science of the Commission on the Reorganization of Secondary Education appear in part in the science subjects that are required or elected in pupils' programs of the high schools included in this study.

THE DETERMINANTS OF SIZE AND POPULARIZATION OF HIGH SCHOOLS

REUBEN R. PALM

Central High School, Red Wing, Minnesota

TWO RELATED PROBLEMS OF MAJOR IMPORTANCE

This article aims to present in brief the most significant portions of an investigation of the determinants (1) of the size of high schools and (2) of the popularization of high-school education in the United States. There can be no question of the importance of the problem of the size of high schools. Several studies already available in print have shown that the small size of a large proportion of our high schools operates as a limitation on the curriculum and on the extra-curriculum, forces a spread of the individual teacher's responsibilities to a discouragingly wide range of subjects, increases the costs per pupil per year, and in many other ways raises the question of the desirability of encouraging the continued maintenance of small high schools or further increase in the numbers of such schools. Among the more recent of the studies showing the limitations of the small rural high school is one by W. H. Gaumnitz of the United States Office of Education.¹ Certain of the earlier studies, especially those by Windes,² Proctor,³ Koos,⁴ and Troxel,⁵ have made some inquiry into the probable factors of size, but none has been sufficiently comprehensive to result in final conclusions. Nevertheless, they

¹ Walter H. Gaumnitz, *The Smallness of America's Rural High Schools*. United States Office of Education Bulletin No. 13, 1930.

² E. E. Windes, *High School Education of the Farm Population in Selected States*. United States Bureau of Education Bulletin No. 6, 1925.

³ William M. Proctor, "Union versus Single District High Schools," *Educational Administration and Supervision*, IV (March, 1918), 146-54.

⁴ Leonard V. Koos, *The American Secondary School*, chap. vi. Boston: Ginn & Co., 1927.

⁵ Oliver Leonard Troxel, *State Control of Secondary Education*. University Research Monographs, Number 4. Baltimore: Warwick & York, Inc., 1928.

raise important questions and are suggestive of avenues for further attack.

In view of our apparent committal in this country to a democratized secondary school, it becomes even more important to identify the determinants of popularization of education on this level than to identify the determinants of size. The study of both problems is included here in a single project because size of high schools and popularization are often considered to have a bearing on each other and because several of the determinants both of size of high school and of popularization have often been hypothesized. In this study the measure of the size of the high school is the number of pupils enrolled, and the measure of popularization is the number of high-school pupils for each thousand of the total population.

DETERMINANTS OF SIZE OF HIGH SCHOOLS

The statistics on the size of high schools utilized in the study were derived from those compiled by the United States Office of Education for the school year 1917-18,¹ these being the most recent data available for detailed use at the time the study was begun. Data of a more recent date have since appeared, but they did not appear until the present study was nearing completion. It is doubtful whether the findings of a study based on more recent evidence would materially modify the conclusions drawn. Statistics on the hypothetical determinants of size and popularization, with certain exceptions in which sources that will be mentioned or that are readily apparent were used, were derived from reports of the United States Bureau of the Census for the year 1920. The hypothetical determinants considered were density of population, the percentages of population classed as urban and rural, the average size of farms, number of rural high schools, the percentage of surfaced rural roads, economic wealth of each state, proportions of non-school-going races and nationalities, and intelligence of the population. The term "non-school-going foreign-born populations," used in the materials to be reported, applies to the ethnic groups in the regions known as Southern Europe, Russia, and the Orient—groups which have been shown

¹ *Statistics of Public Schools, 1917-18*. United States Bureau of Education Bulletin No. 19, 1920.

by the studies of Counts¹ and Koos² to have a proportionately small representation in high schools.

Before consideration is given to the relation of the size of high schools to measures representing the hypothetical determinants, it is desirable to provide from the evidence at hand some impression of the sizes of high schools in the United States. If space permitted, this impression could best be given by reproducing in full at this point Table V from Bureau of Education Bulletin No. 19, 1920. It must suffice to draw more briefly from the evidence in that table. The median number of pupils enrolled in high schools of the United States was fifty. That is, in 1917-18 one-half of our high schools enrolled fifty pupils or less! In number of pupils enrolled the range of the middle 50 per cent of schools was twenty-seven to one hundred. In other words, one-fourth of the high schools of the country enrolled twenty-seven pupils or less and three-fourths enrolled one hundred pupils or less. Clearly, the typical high school in 1917-18 was a small school struggling against the obstacles inherent in smallness. The same table shows that these measures of size varied considerably from state to state. The median enrolment in North Dakota at the lowest extreme was 29, and that in Rhode Island, the state with the largest median, was 210. However, no state was without small high schools.

The relation between the hypothetical determinants and size of high schools was investigated in part by computing coefficients of correlation by the Pearson product-moment method. The evidence from these computations is reproduced in Table I. The determinant "density of population" refers to the population per square mile in each state. The "percentage of urban population" means the proportion of the population in each state that live in cities with populations of more than 2,500. By "average size of farms" is meant the average number of acres per farm in each state. "Percentage of surfaced rural roads" refers to the proportion of rural roads in each state which are hard surfaced. The statistics for these determinants

¹ George S. Counts, *The Selective Character of American Secondary Education*, pp. 106-23. Supplementary Educational Monographs, No. 19. Chicago: Department of Education, University of Chicago, 1922.

² Leonard V. Koos, *op. cit.*, pp. 134-37.

were secured from the United States census for 1920. The percentage of the negro and non-school-going foreign-born populations in each state was likewise compiled from census figures. The amount of economic resources per child by states was obtained from a Research Bulletin of the National Education Association.¹ "Economic resources per child" means the estimated wealth per child of school age in each state.

The reader is warned not to accept the coefficients in Table I at their face value. The validity of coefficients of correlation is depend-

TABLE I
MEASURES OF RELATION BETWEEN HYPOTHETICAL DETERMINANTS OF SIZE OF
HIGH SCHOOLS AND MEDIAN SIZE OF HIGH SCHOOL IN THE STATES

Determinant	Coefficient of Correlation	Probable Error	Mean	Standard Deviation
Density of population.....	.687	.054	89.1	129.9
Percentage of urban population.....	.610	.065	44.5	21.0
Average size of farms.....	-.048	.105	222.6	204.5
Percentage of surfaced rural roads...	.545	.070	14.5	12.3
Number of pupils in public high schools per 1,000 of total population.....	.170	.100	16.5	5.6
Percentage of negro and non-school- going foreign-born populations....	.002	.100	13.1	10.1
Economic resources per child.....	.282	.095	5,232.2	2,092.5

ent on the presence of a sufficient number of cases and on whether the distribution of the data of the variables compared approximates the normal, or probability, curve. Rugg in his book on educational statistics says:

This method is based on a very fundamental assumption, the validity of which is extremely doubtful—namely, that the distribution of ability is rectangular in shape. This means that the *unit of rank* is the same throughout the scale, that is, that individuals are separated from each other at the end of the scale by the same distance . . . by which they are separated in the middle of the scale. . . . The theoretical distribution of the measures by which the method is worked out is assumed to be that of the "normal" or "probability" curve.²

¹ *The Ability of the States To Support Education*. Research Bulletin of the National Education Association, Vol. IV, Nos. 1 and 2. Washington: Research Division of the National Education Association, 1925.

² Harold O. Rugg, *Statistical Methods Applied to Education*, pp. 285-86. Boston: Houghton Mifflin Co., 1917.

That the variable size of high schools did not measure up to these requirements was evident from inspection of the data. Therefore, the Pearson product-moment method of computing coefficients of correlation for the study of the relations concerned was supplemented by three other methods, namely, scatter graphs, bar diagrams, and regression lines. The findings of these supplementary studies, which cannot be reproduced here, in connection with the coefficients in Table I seem to warrant the following conclusions.

1. The relation between density of population and size of high schools is only slight. It is very much less than the coefficient of .687 would lead one to surmise. Inspection of the scatter graph showed that there is practically no relation between density of population and size of high schools in schools with median enrolments of less than 120 students but that the presence of a half-dozen states with unusually high median enrolments and unusually great density of population tends to raise the numerical coefficient so that there appears to be a rather high positive relation between the two variables.

2. The extent to which the population of a state is urban is positively related to size of high schools. The scatter graph and bar diagrams revealed that the relation between these two variables is rather marked and consistent.

3. Only a very slight negative correlation exists between the average size of farms and size of high schools. This finding is contrary to expectation, as it might be assumed that the larger the average farm, the more sparse the population and, therefore, the smaller the high school.

4. A slight positive relation seems to exist between size of schools and surfaced rural roads. The bar diagrams seemed to show that in states having a median high-school enrolment exceeding fifty pupils the correlation between the percentage of rural surfaced roads and size of schools is decidedly positive. In states with median high-school enrolments of less than fifty the relation between the two variables tends to be negative.

5. There is very little relation between size of high schools and popularization. This fact tends to show that large high schools do not attract the populace any more than do small high schools.

6. There seems to be no correlation between the percentage of negro and non-school-going foreign-born populations in the states and size of high schools.

7. There is only a slight relation between economic resources and size of schools.

In summary it may be said that the only hypothetical determinant tested which may be said, with assurance, to have any influence on the size of high schools is urbanization of the population. However, it is very likely that differences among the states with respect to this determinant may be owing to policies of state departments of education or to other factors for which objective measures are not at hand.

DETERMINANTS OF POPULARIZATION

The same methods used in ascertaining the relations between the hypothetical determinants and size of high schools were used in studying the relations between hypothetical determinants and the degree of popularization of high-school education. The distribution of measures of popularization for the states approximates the curve of probability. Therefore, in all but a single instance to be mentioned later, the linearity of the regression of the variables is straight, and the coefficients of correlation are more representative of the relation between the hypothetical determinants and the factor of popularization than is their relation with the factor of size.¹ The measures of relation are reported in Table II.

The list of determinants in Table II includes six of the factors given in Table I. In addition, the following are peculiar to this table: number of rural high schools, number of public high schools, and intelligence of the population. "Number of rural high schools" refers to the high schools located in rural localities or supported by a rural taxing unit. The term "number of public high schools" includes both city and rural high schools. The Army Alpha scores of the troops, both white and colored, drafted from each state during the World War were taken as measures of the intelligence of the population. Table II shows that the only factors which are sufficient-

¹ For an explanation of the effect of the linearity of the regression on size of the correlation coefficient see L. L. Thurstone, *The Fundamentals of Statistics*, p. 208. New York: Macmillan Co., 1925.

ly related to popularization to be accepted for further consideration as determinants are the number of rural high schools, the economic resources per child, the percentage of negro and non-school-going foreign-born populations, and the intelligence of the population. Two issues may be raised in deliberating on the significance of the coefficients of correlation reported.

First, the question arises: Which of the variables represented in the computations is cause and which is result? The most conspicu-

TABLE II
MEASURES OF RELATION BETWEEN HYPOTHETICAL DETERMINANTS OF
POPULARIZATION AND NUMBER OF PUPILS IN PUBLIC HIGH
SCHOOLS PER 1,000 OF POPULATION

Determinant	Coefficient of Correlation	Probable Error	Mean	Standard Deviation
Number of rural high schools*.....	.640	.063	2.6	1.2
Number of public high schools.....	.460	.076	.....	.....
Percentage of urban population.....	.300	.094	44.5	21.0
Average size of farms.....	.038	.100	220.0	202.4
Economic resources per child.....	.551	.070	5,232.2	2,092.5
Percentage of surfaced rural roads†..	.070	.110	12.7	10.7
Percentage of negro and non-school-going foreign-born populations....	-.640	.060	13.1	10.1
Intelligence of the population.....	.810	.035	61.0	11.9
Density of population.....	-.054	.103	114.0	77.2
Size of high school.....	.170	.100	65.5	40.0

* When the number of rural high schools in each state is correlated with the percentage of rural population attending rural high schools, the resulting correlation is .84 ± .03.

† The factor correlated with this determinant is the percentage of rural population enrolled in rural high schools, not the number of pupils per 1,000 of the total population.

ous example of this issue is to be found in the relation between intelligence of the population and popularization. It is conceivable that a high degree of popularization might result from high intelligence or that high intelligence might result from a high degree of popularization. An endeavor to discuss the merits of these claims would lead into the old controversy of hereditarians versus environmentalists. There is also the even greater likelihood that these variables reciprocally influence each other. The question would probably not be so pertinent for the other relations investigated.

The second question is: Do two or more of these determinants measure the same thing? To separate the influence of one determinant from that of the others in the correlation procedure, the

method of partial correlation described by Odell was used.¹ The results are reported in Table III. The variables represented by the subscripts in this table are: No. 1, number of pupils in public high schools per 1,000 of the population; No. 2, number of rural high schools per 10,000 of the rural population; No. 3, intelligence of the population; and No. 4, economic resources per child. It should be noted that the last three of these variables are all those determinants (excepting percentage of negro and non-school-going foreign-born

TABLE III
COEFFICIENTS OF PARTIAL CORRELATION BETWEEN POPULARIZATION
AND RELATED DETERMINANTS

CORRELATION (ZERO ORDER)		CORRELATION (FIRST ORDER)		CORRELATION (SECOND ORDER)	
Subscript	Coefficient	Subscript	Coefficient	Subscript	Coefficient
12	.64	12.4	.56	12.34	.49
13	.81	13.4	.72	13.24	.68
23	.48	23.4	.34	23.14	.11
12	.64	12.3	.49	12.34	.49
14	.55	14.3	.07	14.23	.02
24	.37	24.3	.10	24.13	.08
13	.81	13.2	.75	13.24	.68
14	.55	14.2	.43	14.23	.02
34	.63	34.2	.56	34.12	.40
23	.48	23.1	-.09	23.14	.11
24	.37	24.1	.04	24.13	.08
34	.63	34.1	.39	34.12	.40

populations) for which the coefficients are in excess of .50. This method was not applied to the percentage of negro and foreign-born populations because the distribution of the data constituting the variable was found to be curvilinear instead of rectangular in shape. Thurstone cautions against applying the Pearson correlation-coefficient technique in such a situation because it makes the coefficient of correlation too high.² Omitting this determinant from consideration probably invalidates the conclusions to some extent, but studies like those of Feingold³ show that the intelligence of the

¹ C. W. Odell, *Educational Statistics*, pp. 245-51. New York: Century Co., 1925.

² L. L. Thurstone, *op. cit.*, p. 208.

³ Gustave A. Feingold, "Intelligence and Persistency in High-School Attendance," *School and Society*, XVIII (October 13, 1923), 443-50.

non-school-going groups is relatively low. Therefore, their presence in the army lowered the Alpha scores of the states represented. To that extent the influence of the non-school-going group on popularization is partly represented by the determinant intelligence.

In summary, the partial-correlation procedure shows (1) that, when freed of the influence of the remaining determinants, a marked correlation (.49) exists between the number of rural high schools per 10,000 of the rural population and popularization, (2) that a very marked correlation (.68) exists between intelligence of the population and popularization, and (3) that no correlation (.02) exists between economic wealth per child and popularization.

CONCLUSIONS AND RECOMMENDATIONS

None of the hypothetical determinants tested by the correlation method seems to exert a definite influence on the size of high school except the extent to which the population of the state is urban. This fact suggests that differences in size must be caused by differences in the policies of state departments of education and in the laws, as has been suggested by Proctor, Koos, and Troxel in the studies already referred to, or to other determinants not considered in the present investigation.

The correlation procedure also brought out that there are two major determinants of popularization: the number of rural high schools per unit of the rural population and the intelligence of the population (to the extent that intelligence itself is not a result of popularization). The fact that the number of rural high schools rather than size is a determinant of popularization is significant. It appears that, other things being equal, placing high schools near the homes of prospective pupils is a major influence. That the factor of ethnic origin is a determinant seems very likely, although, owing to the impossibility of subjecting that factor to the same test of correlation, it cannot be said to what extent this determinant operates. That popularization can be affected by the policies of state departments in giving aid and publicity can hardly be doubted.

Probably no one broadly informed on matters pertaining to secondary education will dispute the desirability of keeping down the number and proportion of small high schools by unionization and

consolidation wherever possible. The fact that the number of schools seems to be a positive determinant of popularization in states with rural areas implies that distance has much to do with popularization. If distance can be overcome by providing transportation, it should be possible to reduce the number of small high schools and still increase popularization. The responsibility for initiating improvement must rest in large part with state educational leadership expressed in publicity favoring consolidation and transportation, in extension of state aid where needed, and in securing other legislation fostering these desirable modifications in state programs of secondary education.

The present study does not, of course, exhaust the possibilities of investigating the problems concerned. An appropriate concluding recommendation may well relate, therefore, to the desirability of further investigation. An especially promising field for inquiry should be more intensive investigations of the small and rural communities themselves, the types of districts and schools to be found in such communities, rather than the more extensive investigations including both large and small communities. It is more than likely that the more intensive investigations would disclose the type or types of organization that would foster schools of larger size and greater popularization. Such investigations should now be timely, especially because the rural and sparsely settled areas appear to be those in which the degree of popularization of secondary education is lowest. The major offensive to further popularization must now be carried forward in rural rather than in urban areas.

THE PERSONAL INTERVIEW IN HIGH-SCHOOL GUIDANCE

S. E. TORSTEN LUND

University High School, University of Minnesota

The personal interviewing of pupils is one of the more common procedures employed in secondary schools for purposes of guidance. In the small high school the personal interview appears to be the major phase of the guidance activity, and it is usually carried on by the high-school principal. The prevailing practice is to call the pupil into the office for a conference. This conference may deal with almost any phase of the pupil's school activity, but it is most commonly used in cases requiring discipline. A summons to the office of the principal for a conference almost invariably calls forth from the pupil the comment, "Now what have I done?" It is significant that the newer educational outlook, which places the major emphasis on the pupil, and the rapid rise of the guidance movement have a tendency to change this traditional attitude.

In spite of its common use there is very little scientific evidence to indicate that the personal interview as used in educational guidance in secondary schools is achieving its intended purpose. The experimental studies which have come to the attention of the writer have been concerned largely with college students and with techniques rather than with results obtained. In addition, such studies usually include only the pupils of the lower degrees of mental ability and achievement. The present article is a report of an attempt to submit the personal interview to an experimental test in order to evaluate its usefulness in educational guidance. The experiment was carried out in one of the smaller high schools in Minnesota during the school year 1928-29. Approximately one-half of the 205 pupils enrolled came from the surrounding rural community, the residents of which were largely of Scandinavian descent. The instructional staff consisted of the writer, serving in the capacity of principal and teacher, and nine instructors.

The plan of the experiment.—The original plan contemplated the division of the entire enrolment into an experimental group and a control group. Each pupil in the experimental group was to be interviewed at least once in each six-week period throughout the year. However, a change was made for administrative reasons, and the pupils in the experimental group were interviewed only during the second, third, and fourth of the six periods of six weeks each. This procedure gave an opportunity to test the carry-over value of the work as well as the immediate results. The interviews were all conducted by the writer, and the remaining members of the staff were not informed of the nature of the experiment under way. Since no announcement was made to the pupils, they had no knowledge of the experiment to be carried out. In order that the scholastic achievement of the two groups might be compared, a rather involved method was used in deriving the pupils' marks. Briefly, the pupils in each class were ranked on the basis of average attainment in a minimum of three objective-type examinations given in each subject during each six-week period throughout the year, and each pupil's achievement was expressed in percentile rank. The average percentile rank of each pupil was based on his achievement in all the subjects carried.

Selection of experimental and control groups.—The names of the pupils were arranged alphabetically according to grade. Within each grade the list was divided according to sex, and the names were numbered consecutively. A coin was tossed to determine whether the group composed of names assigned odd numbers or that composed of names assigned even numbers should constitute the experimental group. This procedure was used in order to obtain a random sampling of the total enrolment for each group.

The next step consisted in pairing the pupils of the experimental group with those of the control group. The criteria employed for this purpose were (1) the index of brightness derived from the average results of the two forms of the Otis Self-Administering Tests of Mental Ability, Higher Examination; (2) the raw score in the Otis test; and (3) the scholastic achievement of the pupils during the first six-week period of the year as measured by the average percentile rank. Of the 204 pupils enrolled six dropped out during the

year, two were late in registering, and fourteen were dropped in favor of closer limits in the pairing. Accordingly, the results were obtained from a comparison of ninety-one matched experimental pairs. Girls were paired with girls and boys with boys. In addition, pupils in Grades IX and X were paired together, as were those in Grades XI and XII. Wherever possible, pupils from the rural districts were paired together. The close equivalence of the two groups is indicated by the distributions of the groups with respect to the

TABLE I
SUMMARY OF DISTRIBUTIONS OF CONTROL AND EXPERIMENTAL GROUPS WITH RESPECT TO MATCHING CRITERIA

	Control Group	Experimental Group
Index of brightness on Otis test:		
Third quartile.....	127.2	127.7
Median.....	107.3	107.0
First quartile.....	86.6	86.6
Raw score on Otis test:		
Third quartile.....	44.6	46.5
Median.....	39.0	38.7
First quartile.....	32.1	32.5
Average percentile mark:		
Third quartile.....	67.0	68.9
Median.....	49.0	49.2
First quartile.....	31.1	28.7

various criteria indicated in Table I, which shows that the measures of central tendency and variability agree closely in the two groups. The medians and the first and third quartiles indicate that the distributions of the experimental and control groups with respect to the matching criteria show a high degree of equivalence.

The correlations of the various criteria for the two groups also indicate a highly significant equivalence; not only are the coefficients of correlation very high, but the probable error in each case indicates that chance errors caused by random sampling are, for all practical purposes, insignificant. The correlation between the indexes of brightness of the two groups is $.933 \pm .009$; between the raw scores, $.864 \pm .017$; between the average percentile ranks, $.904 \pm .012$. Consequently, in so far as the criteria employed are concerned, it may be concluded that the experimental and control groups were

comparable, both for group comparisons and for comparisons of individual pupils.

Activities engaged in during interviews.—The activities engaged in during the interviews varied according to the pupil interviewed and the problems which arose. With some pupils several different activities were indicated, while with others only one or two were used. The different types of activities engaged in during the interviews are shown in the following list. In each case the activity mentioned was related as directly as possible to scholastic achievement.

1. Suggesting changes in the program of studies
2. Giving specific help with difficulties in subject matter
3. Discussing a pupil's personality traits
4. Explaining the use of study aids
5. Suggesting means of remedying a limited vocabulary
6. Diagnosing reading difficulties
7. Discovering obvious physical handicaps
8. Discussing home conditions as related to study and to school attitude
9. Analyzing previous general achievement
10. Analyzing achievement in specific subjects
11. Discussing occupational choice
12. Attempting to motivate work
13. Discussing plans for higher education
14. Discussing problems of attendance
15. Discussing relations between teacher and pupil
16. Discussing relations with fellow-pupils
17. Aiding pupil in making adjustment to new and strange school conditions
18. Pointing out qualifications needed for good school achievement
19. Discussing problems of extra-curriculum work
20. Suggesting aids in the writing of examinations
21. Discussing problems of irregular attendance

The amount of time spent in interviewing.—That the practice of interviewing pupils requires a great deal of time is indicated by the findings of a time analysis of the activities engaged in by the writer during a period of six weeks, which showed that the writer spent thirty hours in interviews with pupils during the six-week period, the average duration of an interview being twenty minutes. In addition, forty-five hours were spent in planning interviews and eighteen hours in recording the results. Thus, a total of ninety-three hours, or an average of approximately three hours a day, was spent on the

interviewing program. It is evident that the activities connected with interviewing accounted for over one-third of the writer's work during the school day.

The writer was also interested in determining how much time is spent by the average instructor in activities concerned with guidance. During the same six-week period each instructor kept a record of all activities engaged in and the time allotted to each. It was found that the average instructor in the school studied spent but a small amount of time in activities concerned with guidance. The number of hours spent in all guidance activities, whether carried on with individuals or with groups of pupils, ranged from 0 to 21.5 during the six-week period, the median being 5.7. When only the time spent with individual pupils was included, the range in the number of hours was found to be from 0 to 9.5, with a median of 1.5. The guidance activities included in the analysis of the teachers' time were not related to those carried on by the writer but included only activities which are carried on by the average teacher.

The results.—In general, the results obtained do not show as marked a differentiation between the experimental and control groups as the writer's experience in activities connected with interviewing during the three years preceding had led him to expect. Among the factors which probably conditioned the results the following are important. First, interviewing similar to that carried on during the experiment had been engaged in by the writer in this school for three years. Consequently, all pupils except those in Grade IX had experienced some contact with the personal interview, and it is possible that some of the results expected had already been achieved. The writer noted that the effect of the personal interview on the scholastic achievement of the pupils in Grades IX and X was consistently greater than the effect on the achievement of the pupils in Grades XI and XII. This difference would strengthen the belief that pupils in Grades XI and XII had already derived some benefit from the personal-interview technique and that consequently the law of diminishing returns had begun to operate. It must be pointed out, however, that the data for the lower grades include Grade X, most of the members of which had already had some contact with the personal interview. Second, there is a strong

likelihood that the experimental group had a certain motivating effect on the control group. Throughout the year members of the control group asked the writer when they could come to the office for help in the solution of their difficulties. The writer on numerous occasions overheard members of the control group discussing with the pupils in the experimental group the nature of the interviews. This fact shows that the pupils in the control group were at all times aware of the nature of the help being given during the conferences. It is probable that this condition would not obtain to so great an extent in schools with large enrolments. Third, sex differences were apparent. Invariably the rapport of the girls was better than that of the boys. This sex difference is seen in the results which will be given later, but the reason for it is not readily apparent. It is probable that girls, in general, are more docile and more amenable than boys. However, there may be other deeper and more fundamental reasons for the sex difference. It is noteworthy that the writer succeeded better with the girls than with the boys, at least in so far as immediate results are concerned. It is a matter of conjecture whether the opposite results would have been obtained had the interviewer been a woman. Fourth, the element of time probably affected the results. It is possible that habituated school attitudes and study habits cannot be expected to change radically as a result of only one year's effort.

Two types of results are presented, namely, those obtained from activities indirectly related to scholastic achievement and those pertaining to the scholastic achievement of the pupils. Results of the first type are presented in Table II. This table does not include all the activities previously listed because in many cases it was found difficult to arrive at objective means of measuring results; consequently, the only results included are those which lend themselves to objective, or at least near-objective, evaluation. In the "improved" column are shown only those pupils who showed a definite improvement as a result of the interviews. The results indicated by scholastic achievement will be presented in three main divisions: (1) the achievement for the year, (2) the achievement during the six-week periods in which interviews were held, and (3) the achievement during the six-week periods when no interviews were given.

The achievement for the year.—In comparing the scholastic achievement of the two groups, two techniques were used: (1) The distribution of the average percentile ranks of the pupils in the experimental

TABLE II

NUMBER OF PUPILS FOR WHOM IMPROVEMENT WAS SHOWN IN FACTORS
INDIRECTLY RELATED TO SCHOLARSHIP AND NUMBER FOR WHOM NO
CHANGE WAS SHOWN AS A RESULT OF PERSONAL INTERVIEWS

Difficulty	Number of Pupils	Improved	No Change
Difficulty with program of study...	3	2	1
Limited vocabulary	32	11	21
Physical defect	35	15	20
Home conditions	3	1	2
Difficulties with subjects of study ..	18	11	7
Attendance	14	9	5
Total	105	49	56

TABLE III

SUMMARY OF DISTRIBUTIONS OF PERCENTILE RANKS FOR THE
YEAR'S ACHIEVEMENT OF PUPILS IN CONTROL AND
EXPERIMENTAL GROUPS

	Control Group	Experimental Group	Difference in Means in Favor of Experimental Group*
All pupils (182):			
Median	47.5 ± 2.1	48.5 ± 2.2	.....
Mean	46.5 ± 1.7	48.0 ± 1.7	1.5 ± 1.3
Standard deviation	24.1 ± 1.0	24.7 ± 1.2	.....
Boys (56):			
Median	40.0 ± 4.9	38.0 ± 4.9	.....
Mean	42.0 ± 3.1	38.0 ± 3.1	-4.0 ± 2.5
Standard deviation	25.0 ± 2.2	25.0 ± 2.2	.....
Girls (126):			
Median	52.0 ± 2.6	52.5 ± 2.6	.....
Mean	50.0 ± 2.0	52.2 ± 2.0	2.2 ± 1.6
Standard deviation	25.0 ± 1.5	25.0 ± 1.5	.....

* The probable error of the difference was computed by use of Formula 139 in Truman L. Kelley, *Statistical Method*, p. 182. New York: Macmillan Co., 1923.

group was compared with that of the pupils in the control group, both for the groups as a whole and separately according to sex. Because of limited space only the measures of central tendency and variability are reproduced in Table III, the actual distributions

being omitted. (2) The average percentile rank of a pupil in the experimental group was compared with that of the pupil in the control group with whom he was paired. The results of this type of

TABLE IV

AVERAGE PERCENTILE RANKS DURING THREE PERIODS OF A PUPIL IN THE CONTROL GROUP COMPARED WITH CORRESPONDING RANKS OF MATCHED PUPIL IN THE EXPERIMENTAL GROUP

Period	Control-Group Pupil	Experimental-Group Pupil	Difference in Favor of Experimental-Group Pupil
Interview period.....	79	85	6
Non-interview period...	83	81	-2
Whole year.....	81	82	1

comparison will be designated pupil-to-pupil percentile-rank difference. These differences were computed by the method indicated by the comparison between two pupils given in Table IV.

The distributions of the average percentile ranks for the two groups for the year, summaries of which are given in Table III,

TABLE V

NUMBER OF MATCHED PAIRS FOR WHICH AVERAGE PERCENTILE RANK FOR THE YEAR OF PUPIL IN EXPERIMENTAL GROUP SHOWED A PLUS DIFFERENCE, NO DIFFERENCE, OR A MINUS DIFFERENCE OVER CORRESPONDING PERCENTILE RANK OF PUPIL IN CONTROL GROUP AND MEAN DIFFERENCES IN PERCENTILE POINTS

	Plus Difference	No Difference	Minus Difference	Mean Difference in Percentile Points
All pupils.....	49	0	42	0.05
Boys.....	12	0	16	-0.8
Girls.....	37	0	26	16.0

indicate that the achievement of the experimental group as a whole is slightly superior to that of the control group. This superiority is the result of the improvement of the girls, for in the case of the boys the control group has the higher standing.

The percentile differences obtained from pupil-to-pupil comparisons for the year are found in Table V. In the majority of cases the pupil in the experimental group had the higher standing. The table

makes clear that this superiority is the result of the achievement of the girls. In the case of the boys the opposite is true. When both sexes are considered, there is a slight superiority in favor of the experimental group, although the difference is too small to be considered highly significant.

The achievement during the period in which interviews were held.—Data with regard to the achievement of the pupils during the period of interviewing are given in Table VI, which show that the pupils

TABLE VI
SUMMARY OF DISTRIBUTIONS OF AVERAGE PERCENTILE RANKS
ACHIEVED BY PUPILS IN CONTROL AND EXPERIMENTAL
GROUPS DURING THE PERIOD OF INTERVIEWING

	Control Group	Experimental Group	Difference in Means in Favor of Experimental Group
All pupils:			
Median.....	45.0±2.0	50.3±1.8	.....
Mean.....	47.0±1.5	48.0±1.6	1.0±1.2
Standard deviation....	21.4±1.0	23.0±1.1	.....
Boys:			
Median.....	35.0±3.8	37.5±3.6	.....
Mean.....	40.3±3.0	43.0±2.8	2.7±1.8
Standard deviation....	24.5±2.1	23.7±2.7	.....
Girls:			
Median.....	48.1±2.3	52.5±2.1	.....
Mean.....	49.9±1.8	49.8±1.9	0.1±1.4
Standard deviation....	22.5±1.3	21.9±1.3	.....

in the experimental group had a somewhat higher standing. This difference in favor of the experimental group is not so marked when the distributions are compared as it is when the pupil-to-pupil percentile-rank differences are considered, as is shown in Table VII. In the case of the pupil-to-pupil comparison a marked sex difference is found. The consistent superiority in the case of the experimental pupils shown in Table VII indicates that, while the interviewing was being carried on, there was an immediate effect on scholastic achievement. However, the tables that follow indicate that this effect did not carry over to any appreciable extent.

Achievement during the non-interview period.—Table VIII shows that there was little difference in the achievement of the two groups during the time when the pupils of the experimental group were not

interviewed. In the case of the girls there is indication that the effects of the interview carried over. However, when the pupil-to-

TABLE VII

NUMBER OF MATCHED PAIRS FOR WHICH THE AVERAGE PERCENTILE RANK DURING THE INTERVIEWING PERIOD OF PUPIL IN EXPERIMENTAL GROUP SHOWED A PLUS DIFFERENCE, NO DIFFERENCE, OR A MINUS DIFFERENCE OVER CORRESPONDING RANK OF PUPIL IN CONTROL GROUP AND MEAN DIFFERENCES IN PERCENTILE POINTS

	Plus Difference	No Difference	Minus Difference	Mean Difference in Percentile Points
All pupils.....	50	4	37	2.3
Boys.....	13	1	14	0.9
Girls.....	37	3	23	3.0

pupil comparisons shown in Table IX are examined, only a slight difference in favor of the experimental group for either the boys or the girls is shown. The results of this experiment would indicate that

TABLE VIII

SUMMARY OF DISTRIBUTIONS OF AVERAGE PERCENTILE RANKS ACHIEVED BY PUPILS IN CONTROL AND EXPERIMENTAL GROUPS DURING THE NON-INTERVIEW PERIOD

	Control Group	Experimental Group	Difference in Means in Favor of Experimental Group
All pupils:			
Median.....	47.5 ± 1.8	47.5 ± 1.9	.....
Mean.....	48.7 ± 1.5	48.4 ± 1.5	-0.3 ± 1.0
Standard deviation....	21.6 ± 1.0	22.0 ± 1.0	.....
Boys:			
Median.....	40.0 ± 3.4	38.7 ± 3.3	.....
Mean.....	43.5 ± 2.7	43.0 ± 2.6	0.5 ± 2.0
Standard deviation....	22.0 ± 1.9	21.6 ± 1.9	.....
Girls:			
Median.....	49.2 ± 2.3	51.2 ± 2.1	.....
Mean.....	50.0 ± 1.5	51.5 ± 1.7	1.5 ± 1.5
Standard deviation....	22.5 ± 1.3	21.3 ± 1.3	.....

improvement in scholastic achievement as a result of the personal interview is probably not permanent.

Summary.—Attention should be called to the relatively small number of pupils involved in the experiment from which the facts

were taken. In view of this limitation, it is obvious that the conclusions as to the value of the personal interview in educational guidance in secondary schools cannot be considered final. Certain tentative conclusions may, nevertheless, be advanced.

1. The difference in the scholastic achievement of the two groups for the year was slight. However, when all data are taken into consideration, the difference found is slightly in favor of the experimental group.

2. The scholastic achievement of the pupils in the experimental group during the period of interviewing was superior to that of the pupils in the control group.

TABLE IX
NUMBER OF MATCHED PAIRS FOR WHICH THE AVERAGE PERCENTILE RANK DURING THE NON-INTERVIEW PERIOD OF PUPIL IN EXPERIMENTAL GROUP SHOWED A PLUS DIFFERENCE, NO DIFFERENCE, OR A MINUS DIFFERENCE OVER CORRESPONDING RANK OF PUPIL IN CONTROL GROUP AND MEAN DIFFERENCES IN PERCENTILE POINTS

	Plus Difference	No Difference	Minus Difference	Mean Difference in Percentile Points
All pupils.....	43	5	43	0.8
Boys.....	12	1	15	1.3
Girls.....	31	4	28	0.5

3. When all the data are considered, no significant difference is found in the scholastic achievement of the two groups during the non-interview period, even though the experimental group has a somewhat higher standing.

4. The girls responded favorably to the interview more often than did the boys.

5. The girls showed a greater immediate change in scholastic achievement than did the boys.

6. The carry-over effect was apparently greater in the case of the girls than in the case of the boys.

The interview serves as a valuable device in the discovery and remedial treatment of physical defects, specific weaknesses in subject matter, strained relations between teacher and pupil, reading deficiencies, etc. However, in the small high school the principal, who must usually perform this work, is already heavily loaded with

administrative and supervisory duties and must do some teaching as well; consequently, the personal interview requires the expenditure of too great an amount of time in proportion to the results attained. Whether permanent improvement of attitudes, ideals, and interests are brought about by the personal interview is not known. It is conceivable that such changes can be accelerated by a well-defined program of interviews. No objective data can, however, be advanced to indicate the rate at which such changes take place.

The writer, in spite of the results of this study, believes that the personal interview may be a valuable device for improving scholastic achievement and that possibly a different attack would have brought to light somewhat different results. The pupils were found to be very much interested in their problems, and, once their confidence had been won, they appreciated the opportunity of discussing their difficulties. They were particularly eager to discuss problems of adolescence, a number of which arose during the interviews. It is possible that work of this nature would yield definite results if the study were carried on for a sufficiently long period of time. The writer believes that the personal interview in the secondary schools is an activity that merits further scientific evaluation.

PUPILS TESTIFY TO LEISURE-TIME ACTIVITIES

ROBERT GORSLINE

Superintendent of Schools, Hanover, Michigan

During the school year 1929-30 Flathead County High School, Kalispell, Montana, carried on an investigation to determine, if possible, how completely the school was meeting the seven cardinal objectives of education. A study of the use of leisure was made by means of the following questionnaire, which was filled out by the pupils. While the questionnaire was not perfect, it was filled out in home rooms where rather good supervision was given by the teachers. Not a pupil signed his name, and relatively few papers gave evidence that they had not been filled out in seriousness.

1. How much time do you spend each week reading (books, magazines, papers)?
2. What is your favorite magazine?
3. How much time do you spend on music each week, if any (piano, violin, or other instrument played by you)?
4. How much time do you spend listening to music each week, if any (phonograph, radio, player-piano)?
5. About how much time do you spend in social conversation (visiting), not counting the dinner hour?
6. How many times do you go to the theater each week, if any?
7. How much time do you spend in amateur theatricals each week?
8. How much time do you spend each week on commercial art, if any?
9. How much time do you spend in physical activity (fishing, hiking, basketball, baseball, tennis, etc.)?
10. How much time do you spend each week on an indoor activity, if any (cards, pool, billiards)?
11. How much time do you spend each week dancing, if any?
12. What leisure-time activity do you like the best?

The questionnaire was presented at one time to two groups, namely, the lower-class men (Freshmen and Sophomores) and the upper-class men (Juniors and Seniors). The purpose was to find out what the pupils were doing in their spare time and to learn how the train-

ing of the school affected the occupations engaged in by the pupils during their leisure time.

Table I shows the percentage of pupils who said that they did not spend any time in certain activities. The work of the school apparently is not effective when the percentage of upper-class men who spend none of their leisure in reading is greater than the corresponding percentage of lower-class men. The explanation may be that the amount of outside reading required of the upper-class men is so great that they do not have time to do other reading. It is interesting to note that about one-half the pupils did not play any

TABLE I
PERCENTAGES OF PUPILS WHO SPENT NONE OF THEIR LEISURE
TIME IN VARIOUS ACTIVITIES

Activity	Lower-Class Men	Upper-Class Men
Reading.....	0.0	5.9
Producing music (piano, violin, etc.)..	57.0	46.2
Listening to music (radio, victrola, etc.)	9.0	8.2
Conversation, visiting.....	3.0	15.6
Attending theater.....	30.0	17.0
Producing amateur theatricals.....	77.0	79.0
Engaging in commercial art.....	90.0	83.8
Physical activity.....	18.0	27.6
Playing cards, pool, billiards, etc.....	37.0	24.6
Dancing.....	51.0	32.0

instrument, not even a harmonica, and that nearly 10 per cent did not listen to any music outside of school. A very large number of the lower-class men did not attend the theater and about half of them did not dance. Plainly, the school is offering little training in theatricals and in art. The number of pupils not taking part in physical activity during their leisure time increased in the higher grades until more than one-fourth of the upper-class men reported that they took part in no physical activity during their leisure time. This fact may be partly a result of the lack of a gymnasium in the school.

Table II shows the average amount of time spent in certain activities each week by those who took part. The pupils listed in Table I are not included in Table II. The most interesting fact brought out in this table is the sharp decline in the amount of time

spent in dancing by the upper-class men as compared with the amount of time spent in this activity by the lower-class men. The time spent in commercial art (making posters, etc.) by the older pu-

TABLE II
AVERAGE NUMBER OF HOURS A WEEK SPENT IN VARIOUS
ACTIVITIES BY PUPILS TAKING PART IN THEM

Activity	Lower-Class Men	Upper-Class Men
Reading	7.3	8.0
Producing music (piano, violin, etc.) . .	5.4	3.4
Listening to music (radio, victrola, etc.)	10.3	8.4
Conversation, visiting	9.8	9.4
Attending theater	1.5*	1.2*
Producing amateur theatricals	1.4	0.9
Engaging in commercial art	1.0	2.0
Physical activity	5.0	4.7
Playing cards, pool, billiards, etc.	3.0	3.6
Dancing	4.2	2.3

* Average number of times in a week.

pils is twice as great as that spent by the younger group. Upper-class men also attend the theater fewer times in a week than do the lower-class men. When this table is considered, it must be remembered that the figures show the time spent in the activity by those

TABLE III
PERCENTAGES OF PUPILS INDICATING PREFERENCE FOR
VARIOUS TYPES OF MAGAZINES

Magazine	Lower-Class Men	Upper-Class Men
<i>American Magazine</i>	25.8	34.0
Magazines of popular type	19.1	22.4
Magazines of high type	8.3	11.9
Magazines of trashy type	27.6	12.8
Magazines of popular scientific type . .	10.8	4.0
Women's magazines	8.3	14.8

taking part. The fact that many more pupils were participating in many of the activities during their later years in school may account for the fact that a smaller average amount of time was spent in various activities by the upper-class men.

The outstanding fact in Table III, which gives the percentages of pupils preferring magazines of various types, is the definite trend

away from trashy reading as the pupils advanced in school. No direct effort is made in this school to induce pupils to give up reading poor literature, but every opportunity is used to encourage the reading of good literature. The popular literature that was given as first choice by the upper-class men was of a definitely higher type than that listed as first choice by the lower-class men. The *American Magazine* should properly be placed in the group of "magazines of popular type"; it is listed separately because it appeared to be an outstanding favorite. The sharp slump in the choice of scientific

TABLE IV
LEISURE-TIME ACTIVITIES INDICATED AS FAVORITES AND
PERCENTAGE OF PUPILS PREFERRING EACH

Favorite Activity	Lower-Class Men	Upper-Class Men
Reading.....	24.4	32.4
Music.....	3.8	9.6
Dancing.....	11.4	8.3
Physical activity (including hiking, fishing, etc.).....	39.0	17.2
Athletics.....	13.0	12.4
Playing cards, pool, billiards, etc.....	3.0	9.0
Attending theater.....	1.5	3.4
Sewing.....	1.5	1.4
Conversation, visiting.....	0.0	4.2
Miscellaneous.....	2.3	2.1

magazines among the upper-class men may be accounted for by the fact that the science teachers require a large amount of scientific reading in connection with their classes, and consequently the upper-class men did not consider such reading a leisure-time activity.

A number of startling facts are revealed by Table IV, which shows the favorite leisure-time activities of these pupils. Some people in the community had said that the Flathead County High School unduly encouraged dancing. The results of the questionnaire seem to show that the opposite is the fact. Fewer upper-class men than lower-class men gave dancing as their favorite leisure occupation. Shortly after this study was made, the pupils gave an "all-school mixer," which included dancing from eight to eleven o'clock. The writer took advantage of this party to make a check on the results of the questionnaire. The pupil enrolment at that time was nearly

seven hundred, and there were never more than twenty-nine couples dancing at one time; the average was about twenty-one. This finding seems to bear out the results of the questionnaire. Another startling result is the small number of pupils who gave athletics as their favorite activity. This fact would seem to clear this high school of the criticism made of many high schools that athletics is given the main consideration. The increase in pool-playing and card-playing among the older pupils is probably accounted for by the age limit that keeps younger pupils out of pool halls. The definite decline of the interest in outdoor activities as the pupils advanced in school is interesting because this school is situated in the heart of nature's greatest playground. The definite way in which reading as a first choice increased in popularity gains interest from the fact that at the same time better material was being read.

THE GEOGRAPHICAL DISTRIBUTION OF HIGH-SCHOOL GRADUATES

C. M. WHITLOW

Director of Research, Public Schools, Laramie, Wyoming

A rather common notion prevails that high-school curriculums should be determined largely by local community needs, or, in other words, by the local occupations, trades, and vocations. Frequently surveys are made to discover local vocational needs, and the results of these surveys are rather specifically incorporated in the high-school curriculums. The validity of such procedure rests on the assumption that a large proportion of the local high-school graduates remain in the local community. If all graduates migrate soon after graduation, local vocations deserve little consideration in the determination of courses of study. On the other hand, if all graduates continue as permanent citizens of the local community, it would be absurd to educate for vocations which cannot be used locally. Somewhere between these extremes the facts representing actual conditions obtain.

It is the purpose of this study to present some objective data relative to this matter. Little literature was to be found dealing with the geographical distribution of high-school graduates. Dolch in 1925 reported a study of the geographical and occupational distribution of the graduates of a rural high school in northern Illinois.¹ The present study will give data concerning the geographical distribution of the graduates of the public high school at Laramie, Wyoming. Though the two communities are radically different in type, the data secured present striking similarities as to distribution.

A few facts concerning the city of Laramie should be given to assist in the interpretation of the data. Laramie had no public high school previous to 1910. Before that time high-school pupils attended the Secondary Training School of the University of Wyo-

¹ E. W. Dolch, "Geographical and Occupational Distribution of Graduates of a Rural High School," *School Review*, XXXIII (June, 1925), 413-21.

ming. The University of Wyoming, located at Laramie, is the only seat of higher learning in the state. Hence, graduates who attend college, unless they attend institutions in other states, are limited to this one school. The population of Laramie is between nine and ten thousand. The enrolment in the public high school in 1929-30 was 432. The University high school enrolled nearly 200 pupils. Laramie High School graduates about 65 pupils each year. Approximately 60 per cent of these graduates enter the University of Wyoming.

This study accounts for every graduate of Laramie High School for the years 1910-27, inclusive. Unfortunately, the correct ad-

TABLE I
GEOGRAPHICAL DISTRIBUTION OF PERSONS GRADUATED
BY LARAMIE HIGH SCHOOL IN 1910-27

PRESENT LOCATION	CLASSES 1910-17		CLASSES 1918-23		CLASSES 1924-27	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Laramie.....	37	33.94	63	50.40	156	77.61
Wyoming.....	17	15.60	19	15.20	12	5.97
Other states.....	30	27.52	27	21.60	20	9.95
Deceased.....	13	11.93	2	1.60	2	1.00
Unlocated.....	12	11.01	14	11.20	11	5.47
Total.....	109	100.00	125	100.00	201	100.00

dresses of about 11 per cent of the graduates were not definitely determined. As the local community was thoroughly surveyed, it is fair to assume that unlocated graduates were not living in Laramie in the spring of 1928 when this study was made.

In an attempt to determine the relation between distribution and length of time elapsed after graduation, the graduates of Laramie High School were divided into three groups: those who graduated in the classes of 1910-17, those who graduated in the classes of 1918-23, and those who graduated in the classes of 1924-27. Table I discloses the fact that 33.94 per cent of the graduates of 1910-17 and 50.40 per cent of the graduates of 1918-23 were still in Laramie in 1928, a difference in percentages of 16.46. Part of this difference can be accounted for in the percentages of graduates who were deceased. The figures suggest that after a lapse of five years following

graduation only about 50 per cent of the graduates are to be found in the local community. The mobility of high-school graduates is definitely illustrated by the graduates of 1924-27. Despite conditions which tend to keep graduates in Laramie for at least four years, it was found that 22.39 per cent of the latest graduates had migrated. When it is remembered that 60 per cent of the graduates enter the University of Wyoming and thus remain in the local community from one to four years for advanced schooling, the mobility of even the most recent graduates becomes evident.

In Table II the Laramie figures have been consolidated for purposes of comparison with the Illinois data. The Laramie graduates

TABLE II
GEOGRAPHICAL DISTRIBUTION OF PERSONS GRADUATED BY LARAMIE HIGH
SCHOOL IN 1910-23 COMPARED WITH THE DISTRIBUTION OF PERSONS
GRADUATED BY AN ILLINOIS RURAL HIGH SCHOOL IN 1889-1921.

PRESENT LOCATION	LARAMIE GRADUATES		ILLINOIS GRADUATES*	
	Number	Per Cent	Number	Per Cent
Local community.....	100	42.74	97	41.28
Home state.....	36	15.38	72	30.64
Deceased.....	15	6.41	9	3.83
Elsewhere.....	83	35.47	57	24.25
Total.....	234	100.00	235	100.00

* E. W. Dolch, *op. cit.*, p. 416.

of 1924-27 have been omitted in order to equalize the amount of time elapsed subsequent to graduation. Of the Laramie graduates 42.74 per cent remained in the local community as compared with 41.28 per cent in Illinois. When the case is stated conversely, 57.26 per cent of the Laramie graduates were not to be found in the local community; in Illinois 58.72 per cent were not in the local community. These figures are so interestingly similar as to suggest the need of a check in other communities for purposes of comparison.

In Illinois 30.64 per cent of the graduates left the local community but remained in their home state. Quite a different percentage was found in the case of the Laramie graduates, only 15.38 per cent having remained in the state outside the local community. Probably some correction in the Laramie figures needs to be made in this case.

All Laramie graduates who could not be located were counted in the "elsewhere" group. Undoubtedly some of these persons were in the home state. Hence, the Laramie and Illinois figures for persons in the home state and for persons who were said to be elsewhere are not directly comparable. It is interesting to find that these two items are the only ones to show any particular variation.

The data presented suggest the following conclusions: Only about 50 per cent of high-school graduates will remain for any considerable length of time in the local community. Therefore, local vocations should affect but not dominate the high-school curriculum. The mobility of high-school graduates suggests that a high-school education is not a purely local affair, nor even a state affair, but a matter of national significance.

THE RELATIVE VALUE OF INTENSIVE STUDY AND EXTENSIVE READING IN UNITED STATES HISTORY

ROBERT B. WEAVER
University High School, University of Chicago

PROCEDURES AND CONDITIONS OF THE EXPERIMENT

The purpose of this article is to report an investigation conducted in the teaching of United States history in the seventh grade of the Laboratory Schools of the University of Chicago. The investigation was undertaken to determine the historical understandings gained by pupils from intensive study involving the preparation of exercises compared with the understandings gained from extensive reading of historical accounts.

Three units of the course in United States history had been taught before the investigation here reported was undertaken. During instruction on the first unit the class periods were devoted to the reading and discussion of assigned references. During instruction on the second and third units the instructor experimented with two kinds of study guide sheets: an extensive-reading reference sheet and an exercise guide sheet. Various kinds of exercises were prepared, and varying amounts of time were devoted to the reading of historical accounts; but no attempt was made to determine the comparative value of the two kinds of study guide sheets.

Pupils in two sections, hereafter to be referred to as Sections A and B, were given five objective tests during the study of Units IV and V of the course, and records of the scores were kept. The tests, which were of the same type and, as far as possible, of equal difficulty, consisted of five parts: first, a series of statements to be completed; second, two best-answer questions; third, a series of true-false statements; fourth, three matching questions; and fifth, a series of correct-response questions. The tests were submitted to fifteen teachers of United States history for the purpose of making them comparable and equivalent. Any test which appeared to these teachers

to be more difficult or less difficult than the others was revised or, when revision was impossible, another test was substituted. This method of obtaining equivalence is subject to criticism and is justified only when the investigator is fortunate in his selection of critics. Great care was taken in this case to obtain the services of competent teachers of United States history, and standards of comparison were determined by which the tests were measured.

Instruction on Unit IV of the course was given to the twenty-one pupils in Section A by an extensive-reading method and to the twenty-one pupils in Section B by an intensive-study method, which involved the writing of exercises. During the study of Unit V the procedure was reversed; that is, the pupils in Section B were taught by the extensive-reading method and the pupils in Section A were taught by the intensive-study method.

When the intensive-study method was employed, the pupils during the first forty minutes of each supervised-study period studied three accounts of the subject of study and prepared imaginary themes, historical discussions, outlines, cartoons, summaries, charts, debates, and tabulations. Exercises of all types were not prepared by the pupils during every class period, but in the course of the study of the two units each pupil prepared exercises of all the types indicated. During the last ten minutes of each class period the instructor discussed with the pupils four problems pertaining to the assimilative material which had been studied during the period. During instruction on a unit by the intensive-study method the average number of accounts read by the pupils was 46.8.

When the extensive-reading method was employed, the pupils read as many accounts of the subject of study as possible during the first forty minutes of each supervised-study period but did not prepare exercises based on their reading. During the last ten minutes of each class period the instructor discussed with the pupils the same four problems which were discussed with the pupils of the section in which intensive study was employed. Exactly the same assimilative material was studied by the pupils of the two sections. During instruction on a unit by the extensive-reading method the average number of accounts read by the pupils was 114.2, or 67.4 more accounts than were read by the pupils who were taught during the same period by the intensive-study method.

Although some educators in this country who favor the child-centered school discourage attempts of teachers to guide the pupils' thinking, the majority favor direction of the pupils' thought and guidance of their activity. Successful direction and guidance require that, before instruction on a unit is undertaken by an extensive-reading method or by an intensive-study method, an analysis of the unit be made; that is, that the learning objective (main learning product, intellectually considered) which the pupils are expected to attain and the elements of understanding (minor adaptations) which are expected to result be set forth in specific terms. Such analyses were made for Units IV and V of the course, and the extensive-reading accounts and the intensive-study exercises which were assigned, in the judgment of the instructor, illuminated the objectives determined by the analysis in each case. The two analyses upon which the study materials of the two types were focused are as follows:

UNIT IV: HOW WE SECURED OUR NATIONAL GOVERNMENT

LEARNING OBJECTIVE

Our national government is an outgrowth of experience in Colonial and Revolutionary times and derives its present form from a constitution drawn up by a convention of delegates from the various states, which was adopted by the American people.

ELEMENTS OF UNDERSTANDING

1. Four New England colonies formed a confederation for mutual safety and welfare.
2. Americans learned to act together during the intercolonial wars.
3. Difficulties with the mother-country made the colonists feel the need of acting together.
4. The troubles of the Americans under the Articles of Confederation showed them the need for a stronger union.
5. The value of united action was seen by the American people in the Mount Vernon Conference and the Annapolis Convention.
6. Delegates met in Philadelphia and framed the Constitution of the United States.
7. A terrific struggle preceded the ratification of the Constitution.
8. Our national government was established by the election of a president and congress and the establishment of a court system.

UNIT V: HOW OUR NATIONAL GOVERNMENT WAS TESTED

LEARNING OBJECTIVE

During the first twenty-five years of its existence our national government was tested by serious difficulties which it successfully overcame.

ELEMENTS OF UNDERSTANDING

1. The new government solved difficult financial problems.
2. The new government enforced its laws in spite of armed opposition.
3. The new government maintained its neutrality during a world-war regardless of determined efforts to bring it into the struggle as the ally of one of the combatants.
4. The new government survived the conflicts of rival political parties.
5. The new government stood the strain of a foreign war in spite of internal opposition.

The pupils in the two sections were compared in order to ascertain their relative ages and abilities. In Section A the average chronological age in months was 139.4; in Section B, 147.5. In Section A the average intelligence quotient was 114.7; in Section B, 106.6. The average rate of reading as measured by one of the tests included in Gray's Silent Reading Tests was 3.88 for Section A and 3.76 for Section B. The average rate of reading as measured by the Monroe Standardized Silent Reading Test was 100.9 for Section A and 100.4 for Section B; the average comprehension score on the same test was 28.7 for Section A and 26.9 for Section B. The average comprehension score on the Thorndike-McCall Reading Scale was 28.4 for Section A and 28.9 for Section B. The differences between the pupils in the two sections appear to have no significance as far as the results of this study are concerned for the reason that the pupils in each section were taught by both the intensive-study method and the extensive-reading method.

RESULTS OF THE EXPERIMENT

During instruction on Unit IV, "How We Secured Our National Government," the pupils in both sections were given three objective tests based on the eight elements of understanding in the unit. Table I shows the distribution of the twenty-one pupils in Section A and the twenty-one pupils in Section B on the basis of the test scores. The pupils of Section A, who read extensively, made a higher average on each of the three tests given during the study of Unit IV of the course than did the pupils of Section B, who studied intensively and prepared exercises. The differences between the average scores of the two sections are as follows: for the test on the first five elements, 2.4; for the test on Elements 6 and 7, 3.0; and for the test on Element 8, 3.3. That these differences are not large enough

to be statistically significant is shown by the experimental coefficients of .120, .109, and .166, respectively. The formula¹ used to ob-

TABLE I

DISTRIBUTION OF TWENTY-ONE PUPILS IN SECTION A TAUGHT BY EXTENSIVE-READING METHOD AND TWENTY-ONE PUPILS IN SECTION B TAUGHT BY INTENSIVE-STUDY METHOD ON THE BASIS OF TEST SCORES MADE IN TESTS ON UNIT IV

SCORE	TEST ON ELEMENTS 1-5		TEST ON ELEMENTS 6-7		TEST ON ELEMENT 8	
	Section A (Extensive Reading)	Section B (Intensive Study)	Section A (Extensive Reading)	Section B (Intensive Study)	Section A (Extensive Reading)	Section B (Intensive Study)
56-57.....	1	0	0	0	0	0
54-55.....	0	0	0	0	0	0
52-53.....	0	0	0	0	0	0
50-51.....	0	0	0	1	0	0
48-49.....	3	2	1	0	1	0
46-47.....	3	3	1	1	0	0
44-45.....	4	1	1	1	1	0
42-43.....	2	4	3	0	2	1
40-41.....	4	1	1	0	1	2
38-39.....	0	3	4	3	6	4
36-37.....	1	4	2	3	2	4
34-35.....	3	2	1	1	4	2
32-33.....	0	0	2	1	3	3
30-31.....	0	1	1	2	1	2
28-29.....	0	0	0	4	0	1
26-27.....	0	0	3	2	0	0
24-25.....	0	0	1	0	0	1
22-23.....	0	0	0	2	0	0
20-21.....	0	0	0	0	0	0
18-19.....	0	0	0	0	0	1
Average.	43.0	40.6	36.7	33.7	37.6	34.3

tain these experimental coefficients and others which are given later is as follows:

$$\text{Experimental Coefficient} = \frac{\text{Difference}}{2.78 \text{ S.D. Difference}}$$

Range of scores without other evidence is not a reliable basis of induction but, viewed with other evidence, is indicative of a tendency. The ranges shown in Table I are rather significant for Elements 1-5 and for Element 8. In Section A the range in scores of the twenty-one pupils for the study of the first five elements is from 34 to 56, and in Section B the range for the study of the same ele-

¹ William A. McCall, *How To Measure in Education*, p. 404. New York: Macmillan Co., 1922.

ments is from 30 to 49. The difference in these ranges indicates a superiority for the section in which extensive reading was employed. For the study of the eighth element the ranges are even more significant. In Section A the highest score is 49, and the lowest score is 30; in Section B the highest score is 42, and the lowest score is 18. The difference in these ranges indicates a marked superiority for the

TABLE II
DISTRIBUTION OF TWENTY-ONE PUPILS IN SECTION A TAUGHT BY INTENSIVE-STUDY
METHOD AND TWENTY-ONE PUPILS IN SECTION B TAUGHT BY EXTENSIVE-READING
METHOD ON THE BASIS OF TEST SCORES MADE IN TESTS ON UNIT V

SCORE	TEST ON ELEMENTS 1-2		TEST ON ELEMENTS 3-5	
	Section A (Intensive Study)	Section B (Extensive Reading)	Section A (Intensive Study)	Section B (Extensive Reading)
50-51.....	0	2	0	0
48-49.....	0	0	0	1
46-47.....	0	0	0	0
44-45.....	0	2	0	0
42-43.....	3	3	4	1
40-41.....	1	1	1	2
38-39.....	1	2	1	1
36-37.....	4	5	3	4
34-35.....	0	0	2	0
32-33.....	4	2	3	0
30-31.....	6	2	3	3
28-29.....	1	1	1	4
26-27.....	0	1	1	2
24-25.....	1	0	1	1
22-23.....	0	0	0	1
20-21.....	0	0	1	1
Average.....	34.4	38.0	34.0	32.2

section in which extensive reading was employed. For the study of Elements 6 and 7 the ranges in scores of the two sections are practically identical and not at all significant.

During instruction on Unit V, "How Our National Government Was Tested," the pupils in both sections were given two objective tests based on the five elements of understanding in the unit. Table II shows the distribution of the pupils in the two sections on the basis of their test scores. The pupils in the section taught by the extensive-reading method (Section B during the study of Unit V) made higher scores on the test of the first and second elements of

the unit than did the pupils of the section taught by the intensive-study method. On the test of Elements 3-5, however, the condition was reversed; that is, the pupils of the section taught by the intensive-study method made higher test scores than did the pupils of the section taught by the extensive-reading method. In the test on the first and second elements of Unit V the difference between the average scores of the two sections is 3.6 in favor of the pupils who did extensive reading; in the test on Elements 3-5 the difference between the average scores of the two sections is 1.8 in favor of the pupils who did intensive study. The experimental coefficients of .161 and .076, respectively, show that the differences are not large enough to be statistically significant. However, the difference in the achievement of the two sections during instruction on the first and second elements is greater than the difference in their achievement during instruction on Elements 3-5. This fact indicates that extensive reading was of more value to the pupils of Section B than was intensive study to the pupils of Section A.

In Section B the range in scores of the twenty-one pupils for the first and second elements of Unit V is from 26 to 50, and in Section A the range for the same elements is from 25 to 43. The difference between these ranges indicates a slight superiority for the section in which extensive reading was employed. For Elements 3-5 the difference in the ranges in scores for the two sections is not particularly significant, but it is slightly in favor of the section taught by the intensive-study method.

The data shown in Tables I and II indicate that extensive reading was of slightly more value during the study of Units IV and V than was intensive study which involved the preparation of exercises. The intensive-study method was more effective during instruction on the third, fourth, and fifth elements of Unit V; and the extensive-reading method was more effective during instruction on the first and second elements of Unit V and during instruction on each of the eight elements of Unit IV. The results, however, are rather equivocal, and the differences between the average scores of the two sections are too small to justify the conclusion that either intensive study or extensive reading, as used in this experiment, is distinctly superior.

The average scores made by the twenty-one pupils of Section A during instruction on Units IV and V are shown in Table III. With five exceptions the pupils in Section A made higher average scores during the period of extensive reading. However, the experimental coefficient of the difference (.310) indicates that the difference be-

TABLE III
AVERAGE SCORES MADE ON THREE TESTS BY TWENTY-ONE PUPILS IN
SECTION A DURING EXTENSIVE READING AND ON TWO
TESTS DURING INTENSIVE STUDY

PUPIL	METHOD OF INSTRUCTION		DIFFERENCE IN FAVOR OF EXTENSIVE READING
	Extensive Reading (Unit IV)	Intensive Study (Unit V)	
1.....	48.6	36.5	12.1
2.....	46.0	38.5	7.5
3.....	42.3	35.5	6.8
4.....	42.0	36.5	5.5
5.....	41.6	35.5	6.1
6.....	41.0	33.5	7.5
7.....	41.3	34.0	7.3
8.....	40.6	40.0	0.6
9.....	40.3	41.5	- 1.2
10.....	39.3	40.5	- 1.2
11.....	39.3	31.4	7.9
12.....	39.0	31.0	8.0
13.....	39.0	41.0	- 2.0
14.....	38.6	27.5	11.1
15.....	37.6	29.0	8.6
16.....	36.3	27.0	9.3
17.....	35.3	33.5	1.8
18.....	34.3	29.5	4.8
19.....	34.0	31.0	3.0
20.....	32.3	34.0	- 1.7
21.....	31.0	31.5	- 0.5
Average score.....	39.0	34.2	4.8

tween the scores made by the pupils of Section A during the study of Units IV and V is statistically insignificant. Pupil 1 and Pupil 14, with differences of 12.1 and 11.1, respectively, made much higher scores when they read extensively than when they studied intensively and prepared exercises. The data in Table III show that seven pupils (Pupils 2, 6, 7, 11, 12, 15, and 16), in addition to the two referred to, made much better test scores when they read extensively and that the scores of seven other pupils (Pupils 3, 4, 5, 8, 17, 18,

and 19) were only slightly better during the period of extensive reading. The five pupils whose scores were higher during the period of intensive study did almost as well during the period of extensive reading, the differences in favor of intensive study ranging only from 0.5 to 2.0.

TABLE IV
AVERAGE SCORES MADE ON TWO TESTS BY TWENTY-ONE PUPILS IN
SECTION B DURING EXTENSIVE READING AND ON
THREE TESTS DURING INTENSIVE STUDY

PUPIL	METHOD OF INSTRUCTION		DIFFERENCE IN FAVOR OF EXTENSIVE READING
	Extensive Reading (Unit V)	Intensive Study (Unit IV)	
1.....	49.5	45.3	4.2
2.....	45.0	39.0	6.0
3.....	43.0	36.6	6.4
4.....	41.0	38.6	2.4
5.....	40.5	40.3	0.2
6.....	40.5	39.0	1.5
7.....	39.5	39.0	0.5
8.....	36.5	33.6	2.9
9.....	34.5	35.0	- 0.5
10.....	33.6	33.3	0.3
11.....	33.0	40.0	- 7.0
12.....	32.5	37.6	- 5.1
13.....	32.0	28.3	3.7
14.....	32.0	35.6	- 3.6
15.....	31.5	34.0	- 3.5
16.....	31.0	33.6	- 2.6
17.....	30.0	23.6	6.4
18.....	29.5	40.0	-10.5
19.....	29.5	29.0	0.5
20.....	27.0	26.0	1.0
21.....	26.5	33.3	- 6.8
Average score.....	35.1	35.3	- 0.2

The average scores made by the twenty-one pupils in Section B must be studied before conclusions are drawn concerning scores of individual pupils when they read extensively and when they study intensively and prepare exercises. The average scores for the pupils in Section B during the study of Units IV and V are shown in Table IV. Eight pupils in Section B made higher average scores during the period of intensive study, and thirteen made higher average scores during the period of extensive reading. The differences in favor of the intensive study, however, are much larger than the differences

in favor of the extensive reading. Pupils 21, 18, 12, and 11, with differences of 6.8, 10.5, 5.1, and 7.0, respectively, in favor of intensive study, are exceptions in Section B. They profited to a marked degree by the intensive-study method. That the pupils of this section did about as well when taught by the one method as when taught by the other is shown by the very small average difference of 0.2. The experimental coefficient for the difference (.009, the smallest coefficient found in this study) indicates that the difference between the scores made by the pupils of Section B during the study of Units IV and V, which favors the intensive-study method, is of less significance statistically than any of the other differences, which favor extensive reading.

It is interesting to note from Tables III and IV that the average difference between the scores of the pupils in Section A, who read extensively during instruction on Unit IV and who studied intensively during instruction on Unit V, is 4.8 in favor of extensive reading, while the average difference for the pupils in Section B, who studied intensively during instruction on Unit IV and who read extensively during instruction on Unit V, is only 0.2 in favor of intensive study.

In so far as the results of this investigation may be regarded as a basis for generalization, it appears that the understanding of United States history gained by pupils in the seventh grade when they read extensively from carefully selected accounts of a subject of study is as good as, if not better than, the understanding which they gain when they study a few carefully selected accounts intensively and prepare exercises focused on these accounts.

The data here presented are concerned with the development of historical understandings, but the writer is aware that the development of language abilities is also a responsibility of the history teacher. The slight differences in favor of extensive reading may have been balanced or exceeded by values of an unknown variable, namely, the experiences in expression which were afforded by the intensive method. A study of this phase of the problem would be suitable for a supplementary investigation.

Educational Writings

REVIEWS AND BOOK NOTES

Guidance in rural schools.—A frequent comment of those with special interests in rural education is that books and courses in higher institutions are largely concerned with conditions in city schools, the inference being that the books and courses are not functionally related to the problems in the small rural schools. Many of those engaged in the administration of small high schools believe that guidance is much needed in these schools but that effective programs can be developed only in the larger schools. A recent book,¹ prepared by O. Latham Hatcher, president of the Southern Women's Educational Alliance, and edited by Emery N. Ferriss, professor of rural education at Cornell University, presents a program of guidance activities for small rural schools and should help to alleviate these doubts.

The author reports in the Preface that the book has resulted from fifteen years of experience in counseling and six years of research concerned entirely with guidance problems of rural children. The nature of the research activities is not clear from a reading of the book, as few objective data are reported. Throughout the book there is evidence of experience and trial of the procedures presented. The author says:

This book is intended to serve as a guide to teachers, school principals, supervisors, county superintendents, state boards of education, and others interested in guidance for rural girls and boys. It explains the basic purposes and principles of guidance, suggests plans for organizing guidance in a county and in individual schools, and presents flexible, suggestive programs adjustable to local needs [p. vii].

The book is divided into six parts. An introductory chapter is given to a consideration of the "Factual Basis for the Guidance Programs," in which are reported the miscellaneous interests of 120 rural-high-school pupils, vocational plans of 72 pupils, and the ways in which 50 selected girls and 72 unselected boys and girls have earned money. These data throw some light on the interests and plans of rural children but are hardly adequate to provide the factual basis of a guidance program. The headings of the six parts are: "Learning To Understand the Boy and Girl," "Educational Guidance," "Vocational Guidance,"

¹ O. Latham Hatcher, *Guiding Rural Boys and Girls: Flexible Guidance Programs for Use by Rural Schools and Related Agencies*. New York: McGraw-Hill Book Co., Inc., 1930. Pp. xviii+326. \$2.50.

"Setting Up the Guidance Program," "Other Aspects of Guidance," and "Unifying the Guidance Program." The fifth part covers "Other Guidance Needs and Available Aids" and "Some Representative Agencies Interested in Rural Boys and Girls."

The concept of guidance developed in this book comprehends most of the activities of the school. Curriculum construction to meet individual needs, health education, social and civic training, moral education, social hygiene, and direction of extra-curriculum activities have all been considered as part of the program of guidance. It is not contended that these issues are not of importance in the administration of the small high school. They are of vital importance. The only reason for questioning their inclusion in this treatment of guidance is the confusion which results in including in guidance all the activities of the school and the resultant necessity of limiting the treatment of the activities which are more strictly concerned with guidance. Only a space of a little over four pages is given to a consideration of the use of mental and educational tests in guidance. This treatment is very inadequate and fails to present any of the experimental evidence to show the possibilities of the use of such measures.

This book recommends that there be a school counselor responsible for the program of the school and that all the teachers serve as teacher-counselors, functionaries commonly referred to as home-room teachers. The relation of the school counselor "to the individual pupils is through the teacher-counselors. . . . The teacher-counselor's function is that of educational counseling, as distinct from the more general and vocational functions of the school counselor, but there should ultimately be as many teacher-counselors as there are teachers" (p. 23). While under any plan of organization the teacher will make large contributions to guidance, such large delegations of responsibility to the teacher-counselor in the small school might well be questioned. The teachers are inadequately trained and are already overloaded with large teaching assignments distributed over a number of fields. In addition, they have responsibilities for extra-curriculum activities. The small number of pupils makes it feasible for a school counselor to work with the entire group as individuals. The assignment of responsibility for educational guidance to the teacher-counselor and responsibility for vocational guidance to the school counselor will probably cause confusion, and it infers that the work of educational guidance is less technical than vocational guidance—an assumption that is hardly justified by the requirements of the work.

The author recommends that the responsibility for guidance in the small high school should not be carried by the principal. "The general administrative duties of that office in a school of any size would very often preclude the principal's concentrating sufficiently on the guidance problem to make his direction of it advisable" (p. 28). This statement would generally be accepted for the large school; many will dissent when it is applied to the small school. The principal will be or should be the best-trained worker in the school. In most cases his teaching responsibilities are now so heavy as to prevent effective super-

vision and direction of the school. Extension of the principal's training in guidance and allowance of more time for non-teaching activities, including guidance, constitute a plan of organization deserving serious consideration in developing a program of guidance in the small school. The author has properly stressed the critical importance of the training of the person in charge of guidance within a school.

This book will do much toward focusing attention on guidance in the small school. The reader familiar with the technical literature on guidance will regret that it was not drawn upon. Combined with other books on guidance, this book will be very serviceable in the training of guidance workers in rural areas. Those responsible for the training of principals of rural schools will also find it of large value. It should be read by all who are now in positions of responsibility in directing the program of education in rural communities.

GRAYSON N. KEFAUVER

TEACHERS COLLEGE, COLUMBIA UNIVERSITY

Elementary algebra during the past one hundred years.—What the future course in elementary algebra should include is related to the question of what has been taught in that course in the past, to the important changes in content, and to the tendencies to increase or decrease emphasis on the various topics presented. It is of interest to know the extent to which algebra, since it became a high-school subject, has been reorganized and changed to meet the demands of the modern curriculum.

An attempt to answer these questions is described in a recent publication¹ which comes from the University of Pennsylvania. The author selected 257 representative textbooks in algebra written by 158 authors during the decades from 1818 to 1928 and analyzed the contents of the books. The materials were grouped in the following thirteen classes corresponding to the traditional topics of algebra: exercises, equations, roots and radicals, fractions, general equations and formulas, multiplication, addition and subtraction, division, proportions and progressions, negative exponents, parentheses, factoring, and graphs. Within each of these classes the exercises, questions, and examples were counted to obtain the mean number of exercises per book for each decade, the amount of increase or decrease from each decade to the next, and the percentages of exercises found in the various fifths of the textbooks.

The exercises were then arranged in three groups: tool exercises, that is, exercises expressed in algebraic symbols; verbal exercises, exercises which require translation into symbolic forms; and theory exercises, exercises used to illustrate theory or the development of the various topics. The mean number of exercises of each group was determined for each of the decades, and the percentage for each fifth of the textbooks in which they appeared. Finally, compari-

¹ Amy Olive Châteauneuf, *Changes in the Content of Elementary Algebra since the Beginning of the High School Movement as Revealed by the Textbooks of the Period*. Philadelphia: University of Pennsylvania, 1930. Pp. x+192.

sons were made for the various decades between the simple and the complicated exercises.

The results have been presented in seventy-eight tables and illustrated in thirty-nine diagrams. There are a discussion and summary for each of the thirteen topics and a final summary and comparisons for the study as a whole. Part of the final summary is devoted to a discussion of central tendencies and present changes in the content of elementary algebra. Another part makes comparisons of the results of the study with the recommendations made by the National Committee on Mathematical Requirements.

The author concludes that practically all the recent changes which have taken place in the content of elementary algebra have precedents in the past. Notable exceptions are the introduction of graphs, the elimination of progressions, and the beginning of trigonometry. There is a marked tendency toward simplicity in the exercises of the various topics.

The following tendencies agree with the recommendations of the National Committee on Mathematical Requirements: Verbal exercises are increasing in number; tool exercises are decreasing; complicated algebraic technique is on the decrease; and drill is being limited to processes recommended by the committee.

The study leaves the reader with the impression that elementary algebra has undergone but slight changes, that no radical reconstruction has taken place, and that the changes which have been made are mainly along the lines of simplification.

It is evident that the procedure employed by the author fails to disclose the most far-reaching changes that are now being made. A topical outline of the content of algebra presents the least attractive phases of the subject. It places a premium on mechanical performance and manipulation. There is a constantly growing tendency to include materials for the purpose of giving training in clear and original thinking, in drawing correct inferences, in understanding algebraic expressions, and, most of all, in developing functional thinking. These matters cannot be treated topically, but an account of the changes that are taking place in algebra is incomplete and misleading if it fails to show the content that offers opportunities for such training. There is an abundance of material of this type in all the topics treated in this study, but it seems to have escaped the eye of the investigator.

E. R. BRESLICH

A new textbook in business arithmetic.—Textbooks in business arithmetic in the past have given chief emphasis to work in the fundamental operations and have included more or less application to practical business problems. They have not, as a rule, given the pupil much information with regard to business procedures. A recent book,¹ however, makes an interesting departure in this direction, proceeding perhaps not so far as some would like to see but nevertheless making a noteworthy beginning.

¹ William L. Schaaf, *Progressive Business Arithmetic: An Introductory Course*. Boston: D. C. Heath & Co., 1930. Pp. viii+440. \$1.44.

After four chapters, covering 125 pages, of basic drill in the arithmetical processes of the kind making up the bulk of nearly all courses in arithmetic (by whatever name they may be called), the author devotes the rest of the book to six general types of business problems, namely, business activities, business expenses, interest and banking, paying for goods, business ownership, and the care of money. Each of these topics is taken up in a separate chapter and subdivided into a series of minor business problems. Each minor problem is discussed at some length in order to give the pupil a clear understanding of the actual situation. A series of exercises and problems for solving is then presented. The whole series is followed by twenty-seven pages of systematic review.

Some of the good points of the book are the following: an attractive format, clear type, good paper, good organization by chapters, consecutive numbering of paragraphs throughout the book, brief and clear paragraph headings in bold-face type, and good test exercises, including some questions of the modern objective type, at the end of each chapter. In one or two cases these tests include questions relating to the informational portions of the chapter as well as to the purely arithmetical materials.

Some of the features that impressed the reviewer somewhat unfavorably are the following: a rather boastful preface that perhaps claims a little more for the book than is necessary or strictly in accord with the facts; poor organization within each chapter so that the subdivisions of the chapters do not stand out clearly; a rather dry, monotonous style that young high-school pupils will probably find uninteresting; the usual lack of pictures, drawings, reproductions of photographs, cartoons, etc., that characterizes most textbooks in arithmetic and makes them unattractive to children; a complete absence of any reference to, or any utilization of, the large number of teaching helps, practice pads, diagnostic tests, remedial exercises, etc., available for use in the teaching of arithmetic; and finally, the inclusion of a number of items of doubtful utility, in spite of the claims made in the Preface as to the inclusion of "modern content."

The final impression, however, remains distinctly favorable, especially because of the broadly informational nature of the last six chapters mentioned earlier in this review. The book does more to justify its title as a business arithmetic than do most of the books in this field.

FREDERICK J. WEERSING

UNIVERSITY OF SOUTHERN CALIFORNIA

Achievement tests in secondary-school biology.—The techniques for the construction of educational tests have reached such a state of development that certain clearly defined principles have come into relief. It is not apparent, however, that every test-constructor is cognizant of the principles that have emerged. A publication of recent issue¹ appears to have embodied in the

¹ John M. Presson, *Achievement Tests in Biology for Secondary School Use Based upon an Analysis of the Content of the Subject*. Philadelphia: University of Pennsylvania, 1930. Pp. 150.

investigation reported whatever is considered best in the present state of test development. In this publication are reported the various steps involved in the construction of two achievement tests in secondary-school biology. Test 1 is concerned with plant biology; Test 2, with animal and human biology. Two forms are available for each test.

The choice of material incorporated in the tests resulted from analyses of (1) the seven textbooks in biology in most common use in the secondary schools of this country, (2) 9,052 final-examination questions obtained from 142 public secondary schools located in 45 states, (3) 371 questions of the College Entrance Examination Board, and (4) 876 questions of the Board of Regents for the State of New York. In addition 32 state courses of study and 44 courses of study for individual secondary schools from 29 states were used in making a few adjustments.

The steps in the selection of the test items were (1) the assembling of 1,500 test items based on the analyses of the sources reported, (2) submission of the test items to 19 biology teachers for criticism, (3) arrangement of the items considered valid into a series of tests which were given to 418 pupils in 12 secondary-school classes, (4) selection of preliminary forms of the test, (5) the giving of the preliminary tests to 1,248 pupils in 11 public secondary schools, and (6) construction of equivalent forms, each consisting of 60 simple recall and 40 multiple-response items, by means of Rugg's technique.

The tests in their final forms were administered to 2,115 pupils in 37 public secondary schools located in 22 states. The time allowed for administration is 32 minutes. Large, medium-sized, and small city high schools were represented. Standards or norms are given based on the returns from 1,070 pupils taking both Forms A and B of Test 1 and from 1,045 pupils taking Forms A and B of Test 2. The reliability coefficients given are $.90 \pm .004$ for Form A with Form B of Test 1 and $.88 \pm .005$ for Form A with Form B of Test 2. The probable error of a score for Test 1 is 3.32; for Test 2, 3.11. Additional validity measures given are: (1) the correlations between test scores and teachers' marks, which range from .71 to .75, and (2) correlations between test scores and the Ruch-Cossman Biology Test, which range from .78 to .83. The evidence presented seems to justify the investigator in the statement, "These results show that the tests should be valuable in determining the abilities of pupils in biology courses that include work similar to the content that was analyzed as a foundation for these tests" (p. 129).

On the whole, it may be said that here are presented standardized achievement tests in secondary-school biology which in completeness and accuracy deserve to be placed among the best that have been developed in any field. Within the limitations circumscribing the use of standardized tests in secondary-school science, teachers will find in these tests a valuable aid. The divisions into plant biology and animal and human biology do not adapt the tests well for those courses in which these phases are taught concomitantly. The differences indicated between the norms for high schools of various sizes indicate that norms

for small high schools will be a valuable addition. Experimenters may find in these tests uses in certain aspects of their investigations.

UNIVERSITY OF MINNESOTA

PALMER O. JOHNSON

A new project-book in woodwork.—Although objectives and methods in the field of teaching woodwork to early classes are incidentally presented, the new volume by Roberts¹ is primarily a project-book. It is an important contribution, despite the large amount of similar materials available, because it presents certain phases which have heretofore been generally neglected.

Appeal will be made to administrators of the school unit in question by the emphasis given to art in relation to projects. Industrial teachers have received much deserved criticism for the meagerness or total lack of aesthetic appreciation in their teaching content. Little transfer has been effected from courses in general art because no relation of elements has existed or been concretely shown. This book stresses the principles of design so necessary in good instruction in the woodshop. Modernistic art and its possible shop applications are matters of concern to the teacher of manual arts. It seems unquestionable that this movement is to have an important influence on art expression in all phases of the manual arts. It is not a passing fad. Architecture has stamped its approval in monumental and lasting buildings. The field of advertising has accepted it. There is little doubt that its inclusion in the book under review as a suggestion to the shop teacher is highly appropriate.

Production methods are rightfully associated with design. The author considers production an important part of work in the shop. A section is devoted to jigs and fixtures for rapid production. From the point of view of guidance this feature is excellent, since it offers opportunity for experience in factory methods and personnel control. Examples of charts and production forms are presented.

Several chapters are devoted to an analysis and organization of manipulative subject matter, but definite directions for processes are omitted. The author states that this subject has been covered sufficiently in other books. Whether it has been adequately done and on a basis that will permit of standardization is a question. Teachers of manual arts seem uncertain as to what should constitute a unit of instruction. There is little doubt, however, that eventually the *operation*, as in mathematics, will constitute the basic unit. A further development of such a book with the manipulative processes detailed would be interesting.

The author has confined himself to new and untouched phases of woodworking. The work of a master craftsman, teacher, and artist is combined in this book. It is recommended favorably to all teachers who wish to make readjustments in their shop methods.

VERNE C. FRYKLUND

UNIVERSITY OF MINNESOTA

¹ William E. Roberts, *Woodwork in the Junior High School*. Peoria, Illinois: Manual Arts Press, 1930. Pp. 248. \$1.75.

An elementary textbook in the history of the United States.—Our *United States*,¹ designed for use as a textbook in history for junior high schools and upper grades, has recently appeared. This book covers the entire field of American history; it begins with the European background and the voyages of Leif Ericson and includes brief statements on the election of Herbert Hoover and the beginning of the Boulder Dam. Nevertheless, unlike many textbooks in history, it does not omit essential subjects. Of necessity, the treatments of some parts of this comprehensive outline are brief, and the sentence structure is so condensed that sometimes little of color and style remains.

The treatments of the Colonial period, of the American Revolution, and of the early constitutional development of the United States are excellent. Two chapters are allotted to social and industrial development down to 1860, the material being well chosen and well organized. A reading of the sections dealing with the slavery controversy and the Civil War indicates that the book is intended for use in the North. The slavery issue receives an emphasis more in accord with the traditional view of its importance. In outlining American history since the Civil War, the authors have properly stressed the industrial development of the nation and the growing importance of foreign relations. The intimate connection between the industrialization of America and the nature of our foreign policies is not made plain. A splendid chapter does show the manifold effects of industrial progress in enriching materially the life of the common man. Thus, perhaps the most vital development of the past generation is adequately treated.

Very few statements need modification. The name of Seward is attached to the wrong portrait in the cut on page 459. The authors quote with approval a noted American historian concerning the capture of the "Guerrière" by the "Constitution": "This victory raised the United States in one-half hour to the rank of a first-class power" (p. 283). True in a sense, such a statement needs qualification if misunderstanding is to be avoided. Other slight criticisms might be mentioned, which are, all told, of small importance in comparison with the many substantial merits of the book.

The book is well printed and substantially bound. It will stand the strain of use by the elementary-school pupil. The illustrations are good though not at all unusual. The projects and activities suggested for class use at the end of each chapter deserve the highest praise. Fresh and interesting questions and exercises, references for library reading, and subjects for class reports are included. All these activities are for use on the upper-grade level. *Our United States* is an excellent textbook, which will be extensively used.

D. S. BRAINARD

STATE TEACHERS COLLEGE
ST. CLOUD, MINNESOTA

¹ James Albert Woodburn, Thomas Francis Moran, and Howard Copeland Hill, *Our United States: A History of the Nation*. New York: Longmans, Green & Co., 1930. Pp. 780+xxxiv.

Short stories for junior high school pupils.—Progressive teachers of literature are recognizing the value of extensive reading; they are giving a place of importance to contemporary literature; and they are using the class meeting as a laboratory period. That textbook writers are recognizing these tendencies is indicated by the appearance of such books as a recently published collection of short stories for use in the junior high school.¹ Each of the stories appearing in the volume is by a living author (such writers as Zona Gale, Elsie Singmaster, Ring W. Lardner, and Albert Payson Terhune being represented) and has been published within the last five years. A short biographical sketch of the author of each story adds to the reader's impression of writers as real and living men and women. Extensive reading is encouraged by the range of subjects treated in the stories; the sea, athletics, Hawaii, goblins, animals, orphans, and pioneer life suggest the themes of some of the stories included in the volume. At the close of each story is a list of similar narratives suggested for further reading. The questions given regarding each story are stimulating and are not so detailed as to deaden the pupils' interest in their reading.

The editor makes no claim that the stories in this collection have been read and enjoyed by pupils in the grades for which they are intended. The material included has been selected on the basis of the compiler's opinion with regard to the interests of junior high school pupils. It would seem that in a collection of short stories for use in the junior high school each story should not only be put to the test of the editor's opinion but should also be made subject to the test of pupils' reactions. In general, the stories selected appear to have been wisely chosen, but in some cases (the climax of "Home Is the Sailor," for example) material is included which is probably too subtle for most junior high school pupils.

This collection of short stories will be welcomed by the teacher of literature in the junior high school who is desirous of encouraging extensive reading among her pupils and who wishes to acquaint them with the work of contemporary writers.

B. LAMAR JOHNSON

STATE TEACHERS COLLEGE
MONTCLAIR, NEW JERSEY

A treatment of family finances for the high-school grades.—The title of a recent book on family finance² might suggest at first thought that another book similar to several already in the field had appeared. This is not true, however, for the book is not at all conventional in its treatment of the subject of finance. It is, instead, a broad treatment of the economic and social relationships of finance which confront the family. It represents a distinct contribution to the literature

¹ *New Narratives*. Compiled and edited by Blanche Colton Williams. New York: D. Appleton & Co., 1930. Pp. xii+366. \$1.00.

² Mata Roman Friend, *Earning and Spending the Family Income*. New York: D. Appleton & Co., 1930. Pp. x+416. \$2.00.

of the field in that it provides for the high-school pupil a background of information and a point of view on economic-social matters which are fundamental to a solution of financial problems but which are too often touched lightly, if at all, by those writing in this field.

The book is organized on the basis of units. The first four units deal with the home in relation to the social organization, standards of living, financial organization of the household, and problems of consumption. The remaining four concern themselves with a consideration of principles and questions pertaining to the purchase of food, clothing, shelter, and advancement. Problems of cost of operating are considered in connection with the financial organization of the household. The whole book is prefaced with an introduction to pupils giving them the plan of the book and indicating what they may expect to find out through each unit. Much of the discussion in the book is based on the problems of specific families.

The book deserves commendation for its successful attempt to show the social relations of financial management. Another merit is the sound economics on which the discussion of spending is based. The author has been successful, too, in recognizing various economic levels in the problems chosen.

While, as a whole, the book is free from dogmatic statements, one is inclined to challenge the attitude of finality given to the question of the mother's work as found on page 42, where the author states that families are not so well served today as formerly when mothers contributed to the family income through work with raw materials rather than through the present plan of earning money; and again on page 94 where the statement is made that, when there are children, it is important that the mother be able to devote her entire time to home making. One questions whether there is evidence enough to support so final a statement and whether the point of view would not be strengthened by a discussion of the factors that influence the effect on the children of the mother's work outside the home, such as the type of job, the amount earned, full-time and half-time work, community facilities for the care of children, and other related problems.

One wishes that in the discussion of various systems of organizing family finance more of the plans actually in use in families were discussed from the standpoint of their advantages as well as disadvantages. For instance, no reference to joint bank accounts is made, though this is a plan frequently used. It would seem that more could be said about the handling of allowances by high-school pupils since this problem is recognized as important in family finance today and is certainly of immediate interest to those for whom the book is designed.

There is no question but that the book will prove a stimulating textbook for many high-school groups, boys as well as girls, because of its interesting style, its broad point of view, and its concrete problems. It would seem, perhaps, that

for use as a textbook it is better adapted to the later years of high school than to the earlier ones, but only trial can prove this judgment.

DEPARTMENT OF VOCATIONAL EDUCATION
STATE OF ARIZONA

MILDRED WEIGLEY WOOD

A new high-school textbook in physics.—In reviewing a recent high-school textbook in physics,¹ one is reminded of the boy who wished that he had been born centuries earlier so that history books would have been thinner. Physics courses have tended to eliminate little of the material taught at earlier periods but have added much. The additions in the book under review fall under two heads: first, materials dealing with the newer discoveries and inventions—such as electric and gas refrigeration, color photography, talking pictures and television—and, second, the augmented materials dealing with practical modern applications of the older principles of physics.

Concerning the purpose of the textbook the author says in the Preface, "Physics is taught, first, that the student may increase his knowledge of the physical world about him, and second, that he may gain, through this knowledge, increased power to control the forces of nature for his own benefit and for the benefit of others" (p. v). The illustrative material and practical applications are largely drawn from the home or agencies which serve the home. Many problems are presented in English units of measure, although the metric system is not neglected. A short chapter dealing with practical applications usually precedes the chapter discussing the theoretical aspects of a unit. This serves to arouse interest and to lead to a better understanding of the theoretical portions. While the practice of beginning with the mechanics of solids and progressing in turn through liquids, gases, heat, etc., is followed, much of the more difficult work in mechanics is deferred to a section at the end of the book. This arrangement permits a teacher to omit it altogether or to teach it after a better background for its comprehension has been established.

From a pedagogical standpoint the book is well conceived. The chapters are relatively short; there are frequent headings and subheadings. Many problems are fully solved and explained. The exercises are both mathematical and non-mathematical. Of the latter many are of the thought-provoking type rather than the memory type. The book is amply illustrated. Effective use is made of pictograms, which are employed to represent such things as the layout of an electrical power and distributing system or that of an oil-burning heating system.

There are ample grounds for believing that science courses in high school should be accompanied by considerable reading of related materials in addition

¹ Carleton John Lynde, *Everyday Physics*. New York: Macmillan Co., 1930. Pp. xiv+578. \$1.80.

to the textbook. This reading may be of such type as to bring about the realization of the vocational, the leisure-time, or the social-civic aims of education. The inclusion of suggested reading materials, either in the form of footnote references or as lists at the ends of chapters, would have served to impress upon teachers and pupils the fact that not all of physics is found in a high-school textbook but that much other interesting and valuable reading may be found within the general field of science. The textbook under discussion is by no means alone in the practice of omitting bibliographical material.

All in all, *Everyday Physics* is better than "just another new textbook" and has much to commend it to the serious consideration of physics teachers in secondary schools.

R. J. BRADLEY

PARSONS COLLEGE
FAIRFIELD, IOWA

CURRENT PUBLICATIONS RECEIVED

GENERAL EDUCATIONAL METHOD, HISTORY, THEORY, AND PRACTICE

- BACHMAN, FRANK P. *Training and Certification of High School Teachers*. Field Studies No. 2. Nashville, Tennessee: Division of Surveys and Field Studies, George Peabody College for Teachers, 1930. Pp. 176. \$0.70.
- BUSWELL, G. T., and JOHN, LENORE. *The Vocabulary of Arithmetic*. Supplementary Educational Monographs, No. 38. Chicago: Department of Education, University of Chicago, 1931. Pp. xii+146. \$1.25.
- DAVIS, SHELDON EMMOR. *The Teacher's Relationships*. New York: Macmillan Co., 1930. Pp. xiv+416. \$1.80.
- GESELL, ARNOLD. *The Guidance of Mental Growth in Infant and Child*. New York: Macmillan Co., 1930. Pp. xii+322. \$2.25.
- GIFFORD, WALTER J., and SHORTS, CLYDE P. *Problems in Educational Psychology*. Garden City, New York: Doubleday, Doran & Co., Inc., 1931. Pp. xiv+728. \$3.00.
- HORNE, HERMAN HARRELL. *This New Education*. New York: Abingdon Press, 1931. Pp. 280. \$2.50.
- JORDAN, RIVERDA HARDING. *Education as a Life Work: An Introduction into Education*. New York: Century Co., 1930. Pp. xii+304. \$2.00.
- McKOWN, HARRY C. *Assembly and Auditorium Activities*. New York: Macmillan Co., 1930. Pp. xxii+462.
- MAYS, ARTHUR B. *An Introduction to Vocational Education*. New York: Century Co., 1930. Pp. x+324. \$2.00.
- MORGAN, M. EVAN, and CLINE, ERWIN C. *Systematizing the Work of School Principals for Elementary and Secondary School and Junior College Executives*

- and Their Assistants*. New York: Professional & Technical Press, 1930. Pp. xvi+374.
- PHILLIPS, CLAUDE A. *Modern Methods and the Elementary Curriculum*. New York: Century Co., 1931 (revised). Pp. xviii+522. \$2.50.
- RALSTON, ALENE, and GAGE, CATHARINE J. *Present Day Psychology: An Objective Study in Educational Psychology*. Philadelphia: J. B. Lippincott Co., 1931. Pp. xiv+404.
- STUTSMAN, RACHEL. *Mental Measurement of Preschool Children with a Guide for the Administration of the Merrill-Palmer Scale of Mental Tests*. Yonkers-on-Hudson, New York: World Book Co., 1931. Pp. x+368. \$2.20.
- SYMONDS, PERCIVAL M. *Tests and Interest Questionnaires in the Guidance of High School Boys*. New York: Teachers College, Columbia University, 1930. Pp. viii+62.
- WOOD, ERNEST RICHARD. *A Graphic Method of Obtaining the Partial-Correlation Coefficients and the Partial-Regression Coefficients of Three or More Variables*. Supplementary Educational Monographs, No. 37. Chicago: Department of Education, University of Chicago, 1931. Pp. xii+72. \$1.00.

BOOKS PRIMARILY FOR HIGH-SCHOOL TEACHERS AND PUPILS

- BLANCKÉ, WILTON W., and SPECK, JAY. *A Gateway to Music*. Boston: D. C. Heath & Co., 1931. Pp. iv+178. \$1.48.
- BUTTRICK, HELEN GOODRICH. *Principles of Clothing Selection*. New York: Macmillan Co., 1930 (revised). Pp. xiv+220. \$1.00.
- CHRIST, JAY FINLEY. *Modern Business Law*. New York: Macmillan Co., 1930. Pp. xiv+612. \$2.00.
- COLEMAN, SATIS N. *The Drum Book*. New York: John Day Co., 1931. Pp. viii+190.
- LOGAN, JESSIE E. *Goodly Company: A Book of Quotations and Proverbs for Character Development*. Chicago: Beckley-Cardy Co., 1930. Pp. 222. \$1.00.
- MACDONALD, MARGARET ANNE. *The Class Organization and Activities*. New York: A. S. Barnes & Co., 1931. Pp. xvi+134. \$1.00.
- MEYER, HAROLD D. *The School Club Program*. New York: A. S. Barnes & Co., 1931. Pp. x+178. \$1.00.
- NICHOLS, FREDERICK G. *New Junior Business Training*. Chicago: American Book Co., 1930. Pp. xii+388.
- POUND, OLIVIA. *Extra Curricular Activities of High School Girls*. New York: A. S. Barnes & Co., 1931. Pp. viii+98. \$1.00.
- RODGERS, ROBERT H., and BELMAN, HARRY S. *My Educational Guidebook*. Milwaukee, Wisconsin: Bruce Publishing Co., 1930. Pp. 24. \$0.20.
- ROGERS, FREDERICK RAND. *Physical Capacity Tests: Notes on Testing Techniques and the Significance of Tests*. New York: A. S. Barnes & Co., 1931. Pp. viii+50. \$0.75.

RUGG, HAROLD. *A History of American Government and Culture: America's March toward Democracy*. Boston: Ginn & Co., 1931. Pp. xviii+636. \$1.96.

TAYLOR, R. EMMETT, and OWENS, RICHARD N. *Elements of Accounting*. New York: Macmillan Co., 1930. Pp. x+518. \$1.60.

PUBLICATIONS OF THE UNITED STATES OFFICE OF EDUCATION
AND OTHER MATERIAL IN PAMPHLET FORM

GARRISON, NOBLE LEE. *Current Practice in Coordination of College and Training School Work*. Ypsilanti, Michigan: Noble Lee Garrison (Education Department, Michigan State Normal College), 1930. Pp. 26.

PERSING, K. M. *Persing Laboratory Chemistry Test*. Bloomington, Illinois: Public School Publishing Co.

Recent issues of the Office of Education:

Bulletin No. 13, 1930—*The Smallness of America's Rural High Schools* by Walter H. Gaumnitz.

Bulletin No. 26, 1930—*Teachers' Guide to Child Development: Manual for Kindergarten and Primary Teachers*.

Bulletin No. 29, 1930—*Factors Affecting the Cost of School Transportation in California* by Frank O. Evans.

Bulletin No. 30, 1930—*Kindergarten-Primary Education* by Mary Dabney Davis.

Pamphlet No. 13, 1930—*Housing and Equipping the Washington Child Research Center* by Mary Dabney Davis and Christine Heinig.

MISCELLANEOUS PUBLICATIONS

LANGDON, GRACE. *Home Guidance for Young Children: A Parents' Handbook*. New York: John Day Co., 1931. Pp. xviii+406.

